

## Exhibit 144

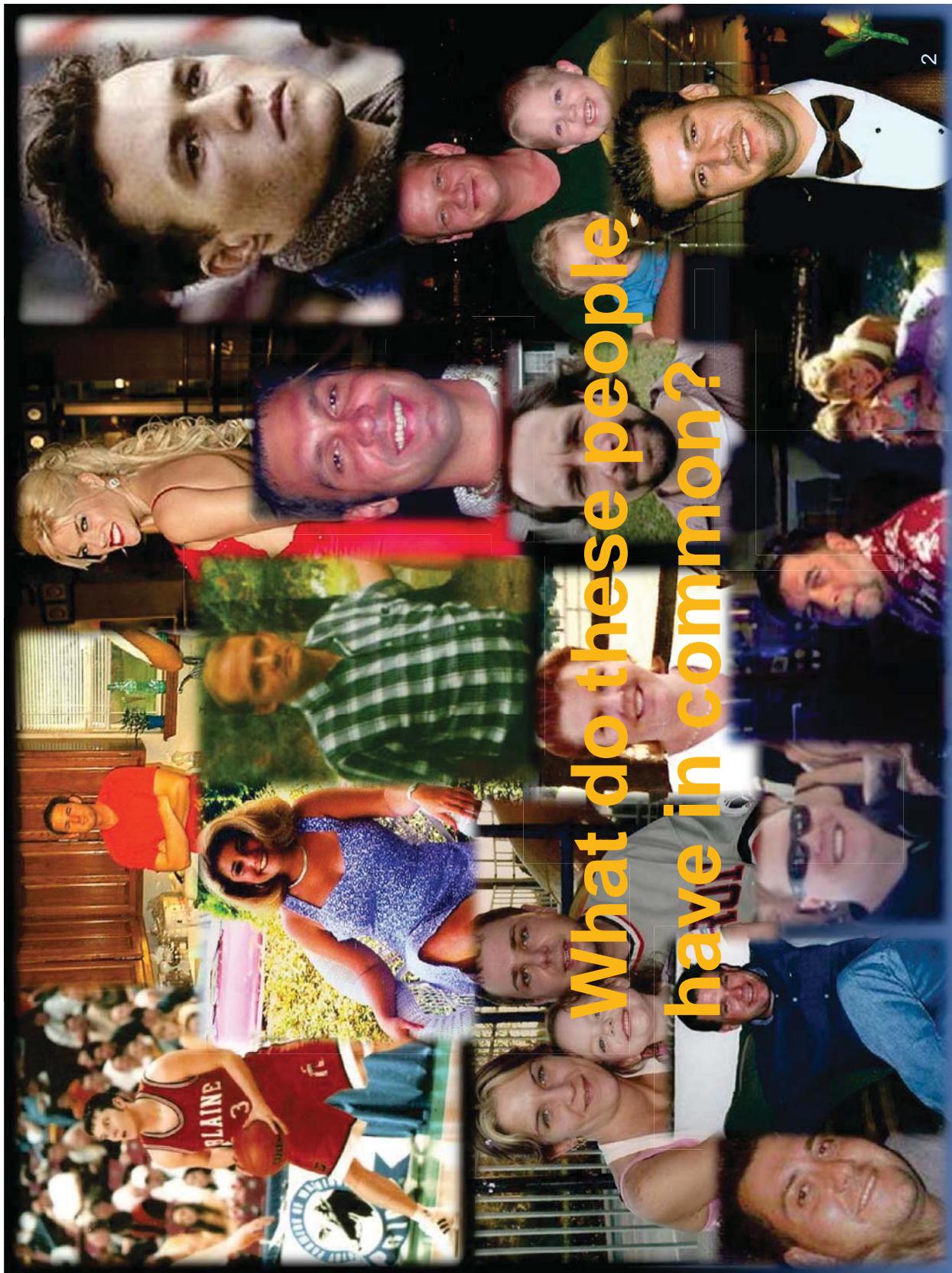
Ohio Department of Health  
Violence and Injury Prevention Program



# Alarming Rise in Unintentional Drug Overdose Deaths in Ohio

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A GROWING  
PROBLEM:

CHANGES OVER  
TIME IN  
U.S. & OHIO

## Percentage change in number of annual deaths for leading causes of injury, by mechanism and intent - Ohio, 1999 to 2006<sup>1</sup>

<sup>1</sup>Source: Ohio Dept of Health, Office of Vital Statistics



# Poisoning: The "Traditional" Picture



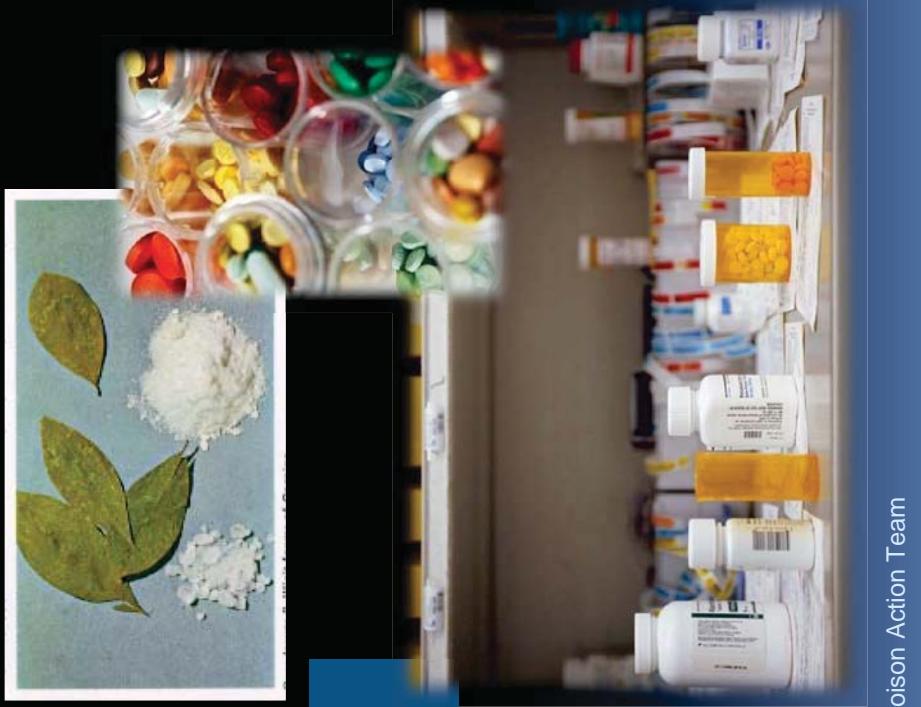
Childhood Poisonings



DRAFT - for use by OIPP Drug/Medication Poison Action Team

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# Poisoning: Burden of Fatal Poisonings



## Adolescent and Adult Poisonings



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# What is a Poison?

A poison is anything that can harm *someone* if it is:

- (1) used in the wrong way,
- (2) used by the wrong person,  
or
- (3) used in the wrong amount\*.



\*Source: HRSA, PoisonHelp

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**Overdose = Drug/Medication Poisoning**  
*(result of exposure to poison)*

**Unintentional = “Accidental” vs.**  
**Intentional (Suicide or Homicide)**



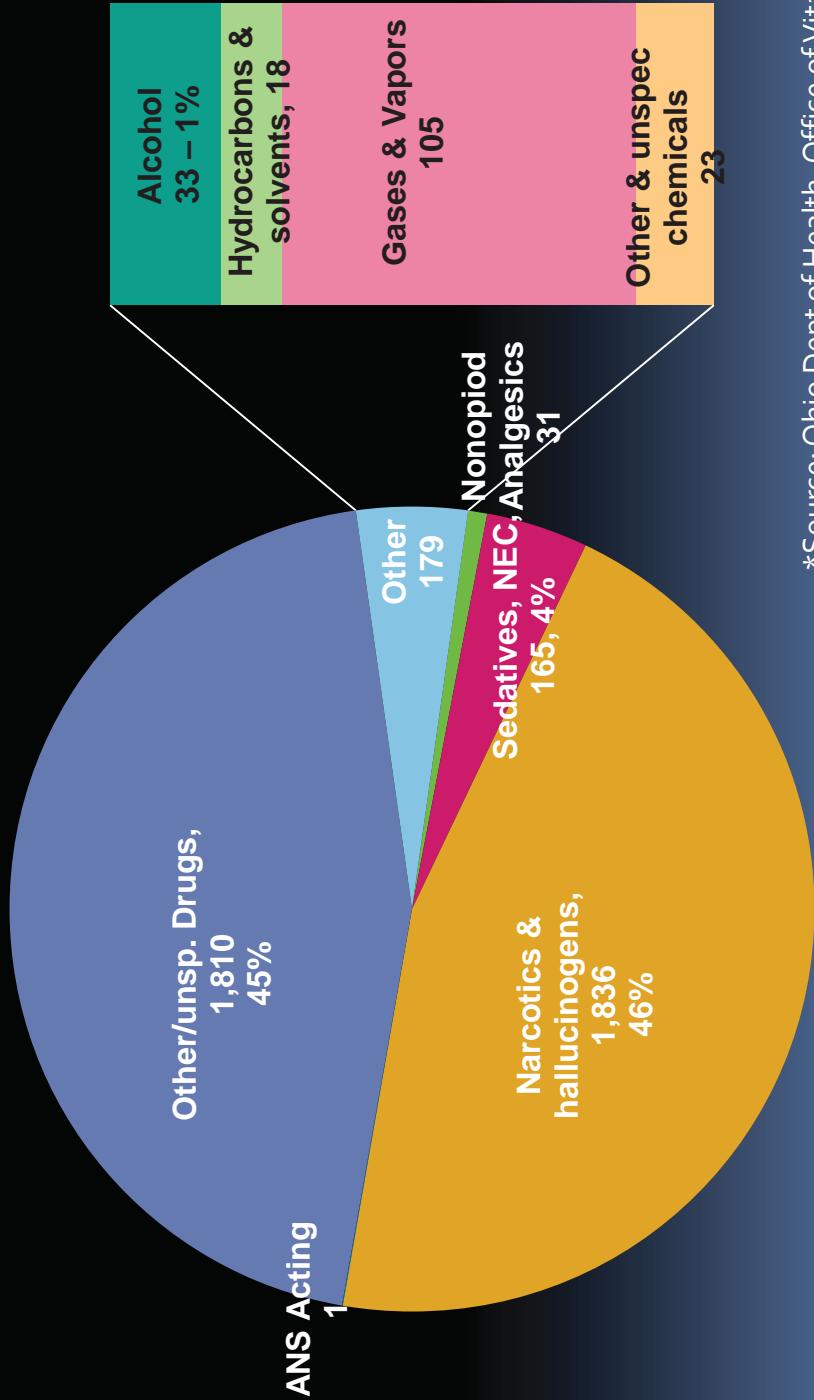
8

## Number of deaths from MV traffic and unintentional poisonings by year, Ohio 1999-2007\*



# Proportional distribution of unintentional poisoning deaths by type of poison, Ohio 2003-06\*

**96% of all unintentional poisoning deaths were due to drugs/medications.**



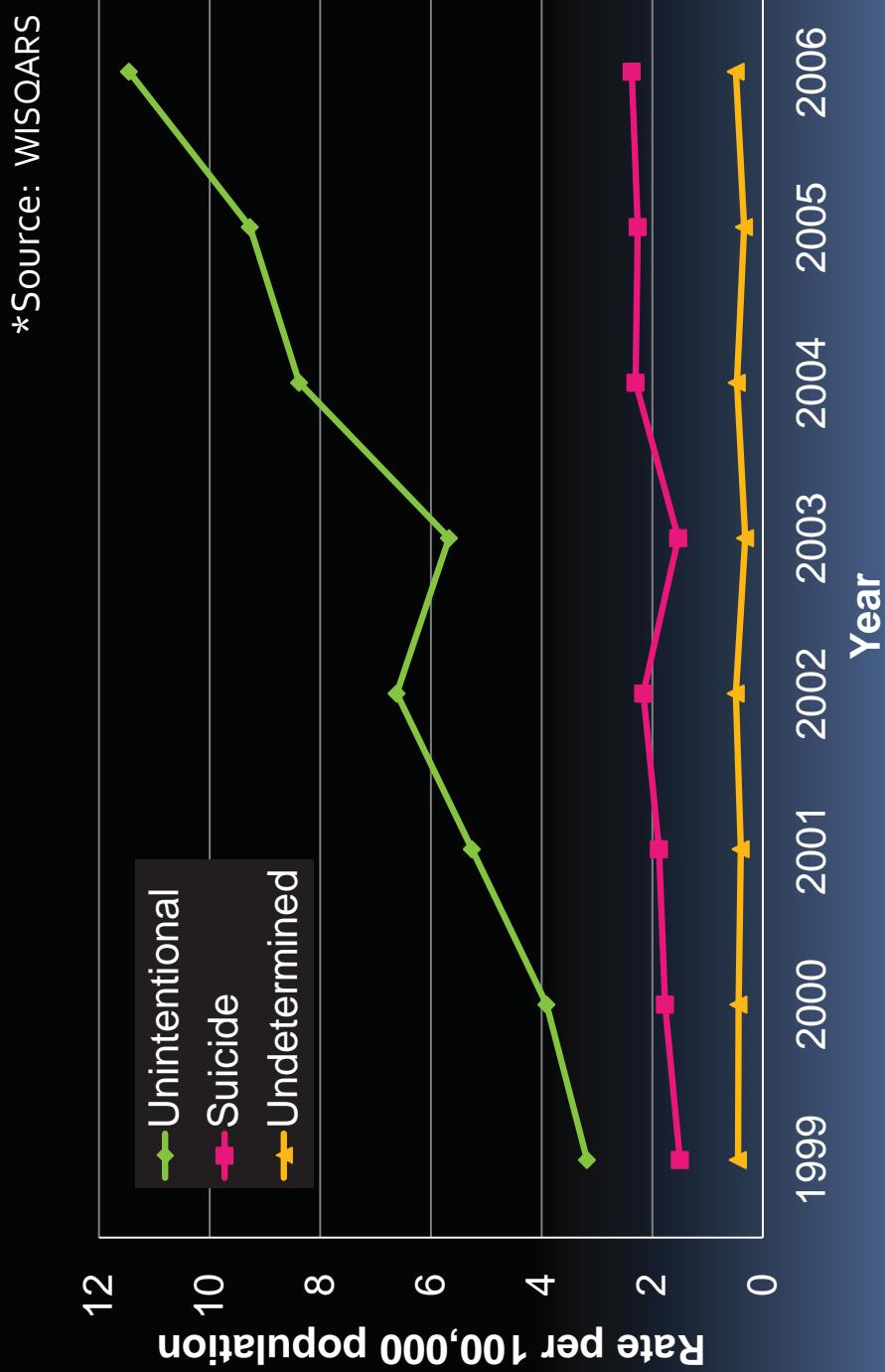
\*Source: Ohio Dept of Health, Office of Vital Statistics

## Number of deaths from MV traffic and unintentional drug poisonings by year, Ohio 2000-2007\*

\*Source: ODH Office of Vital Statistics



## Poison death rates (per 100,000) of Ohio residents by manner, year, 1999-2006\*



## US deaths and death rates due to unintentional drug poisoning by year, 2000-05\*



\*Source: CDC WONDER

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Number of U.S. deaths due to  
unintentional drug overdoses  
in 2005 exceeds that of  
one large jet crash  
*every day for 2 months,*  
each killing 350 people



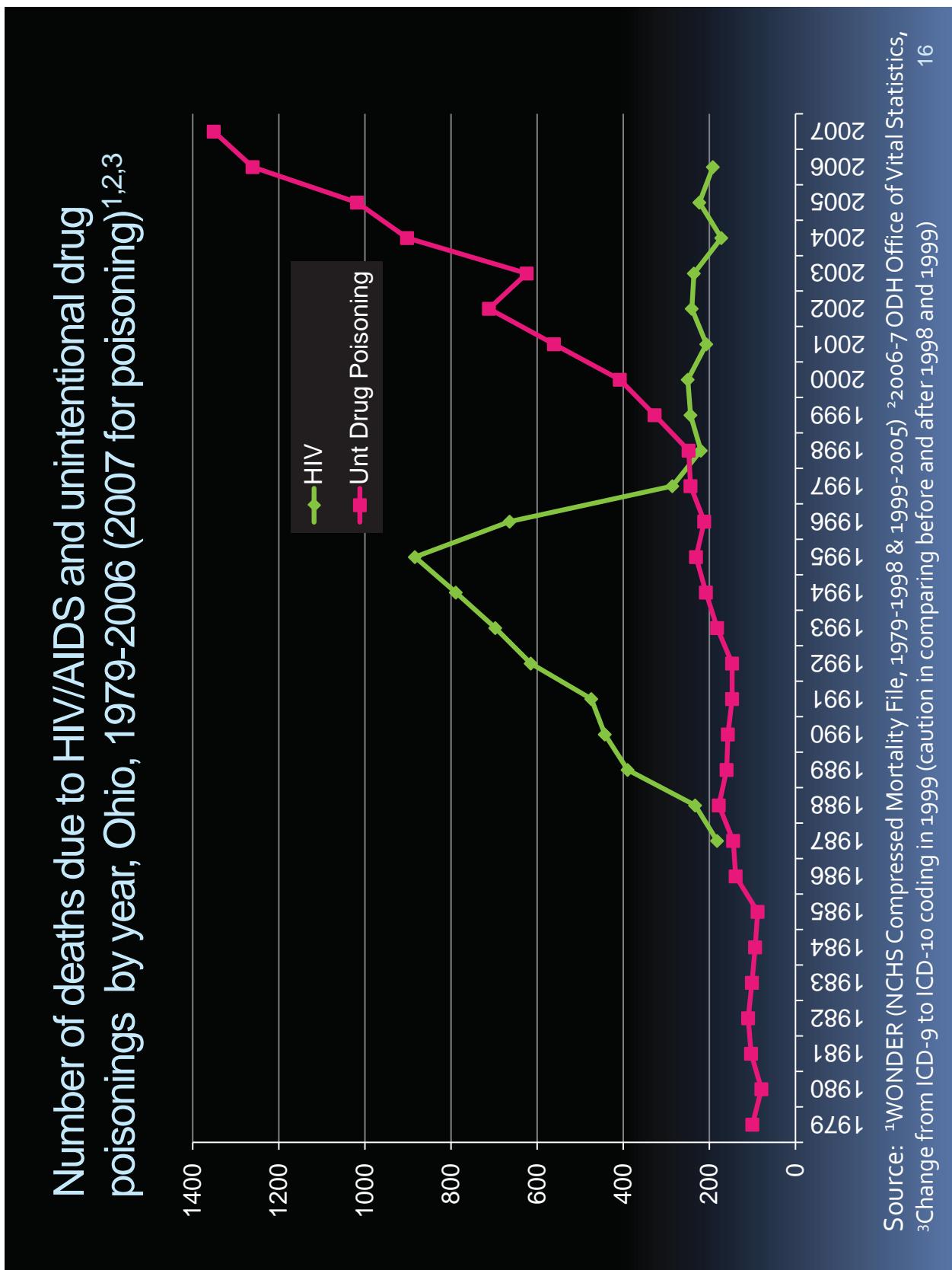
14

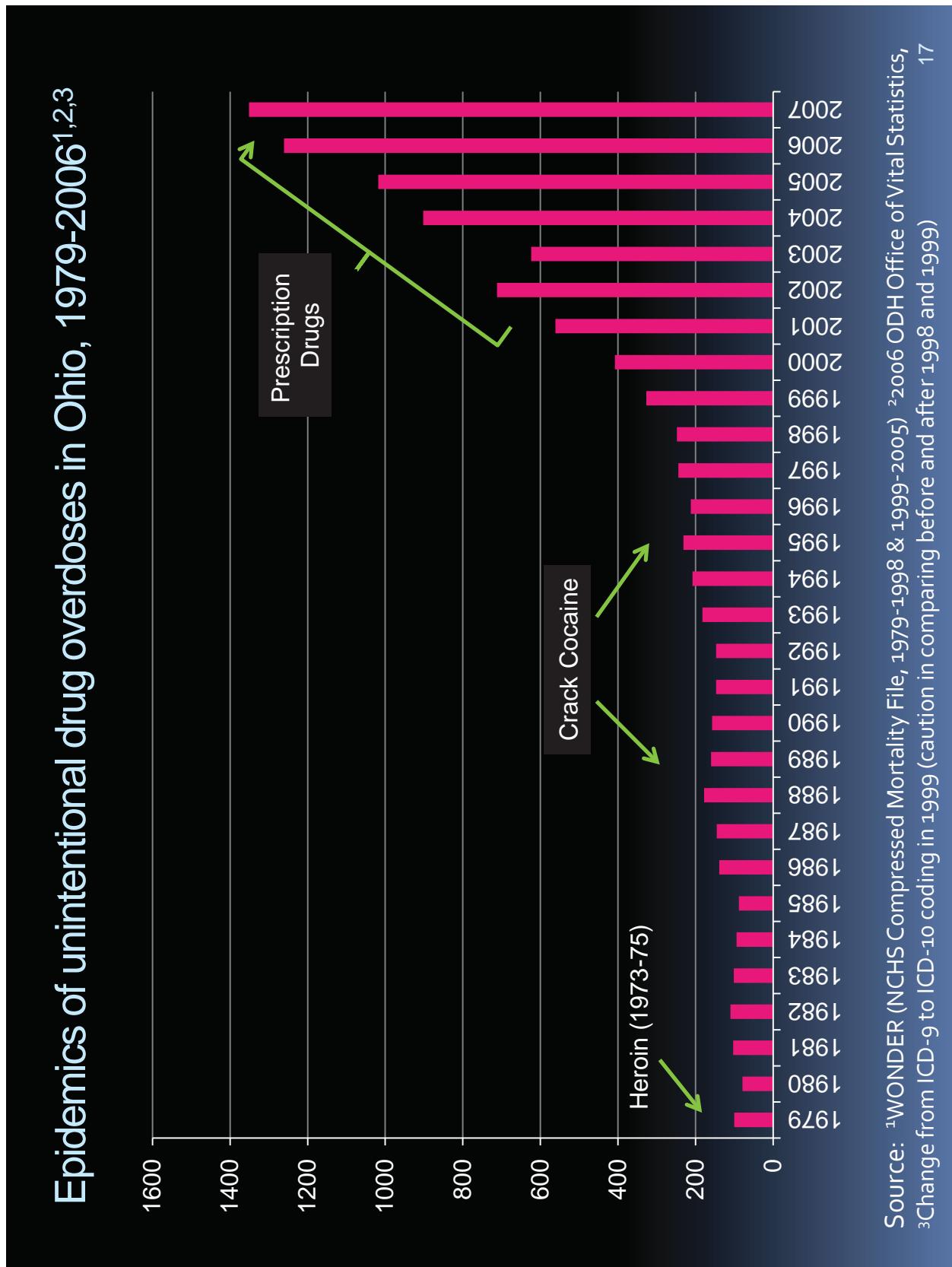
## Ohio<sup>1</sup> and US<sup>2</sup> unintentional drug poisoning death rates per 100,000 population, 1999-2006



<sup>1</sup>Source: ODH Office of Vital Statistics; <sup>2</sup>Source: CDC WONDER.

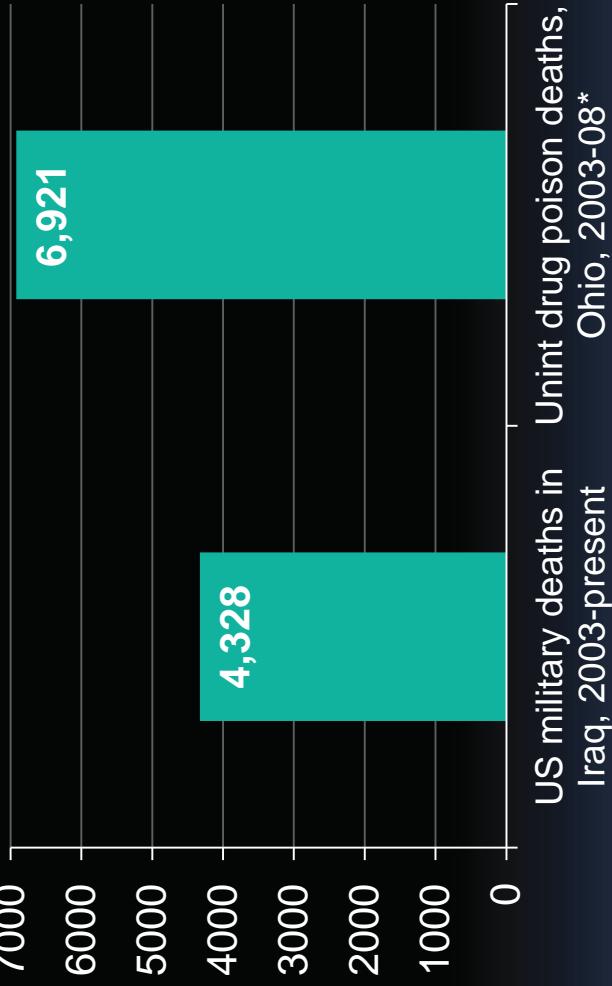
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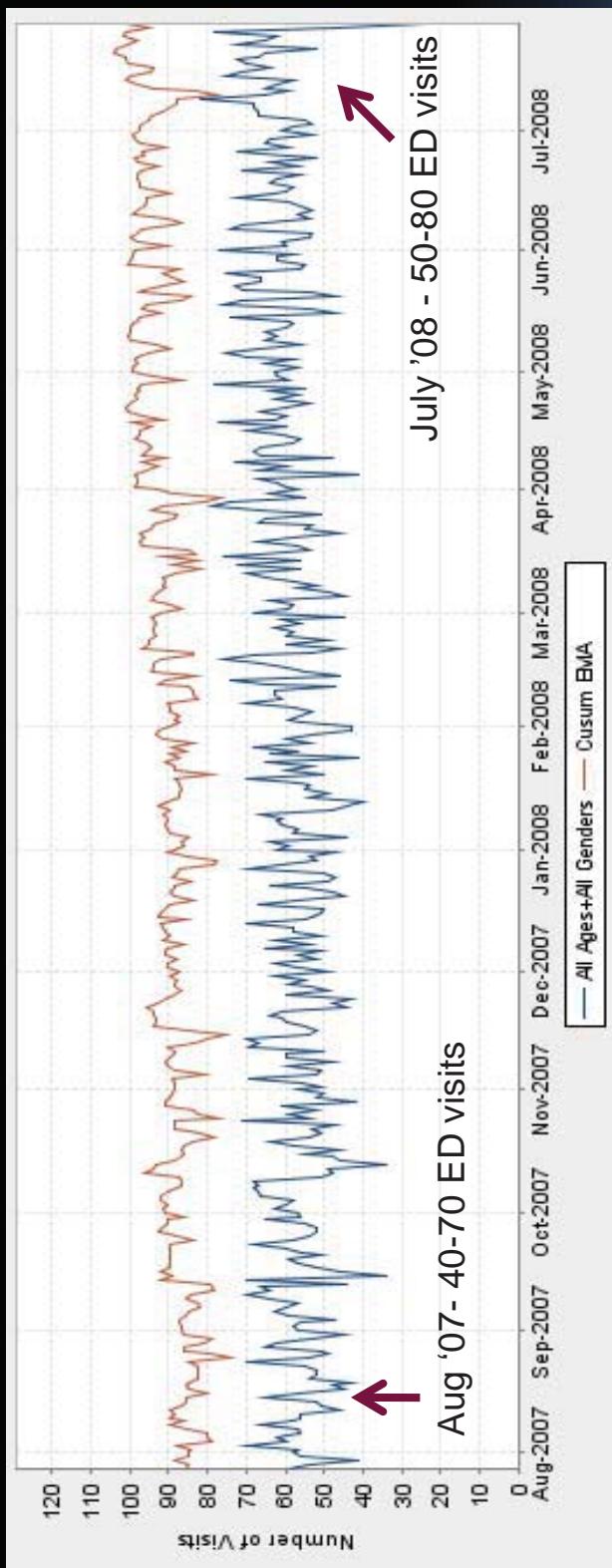
## US military deaths in Iraq (2003-present)<sup>1</sup> vs. unintentional drug poisoning deaths in Ohio (2003-08)<sup>2</sup>

- As of July 23, 2009:  
4,328 members of the U.S. military had died in the Iraq war since it began in March 2003.
- 6,921 deaths due to unintentional drug/medication poisoning in Ohio.



Sources: <sup>1</sup>Associated Press, accessed 6/25/09  
2ODH Office of Vital Statistics; \*2008 figures preliminary, numbers may increase

## Number of daily Ohio ED visits for “drug overdose” or “symptoms of drug overdose” as chief complaint on admission, August 2007-July 2008\*



\*Source: EpiCenter (Ohio ED chief complaint on admission data using “drug OD” as chief complaint)

19

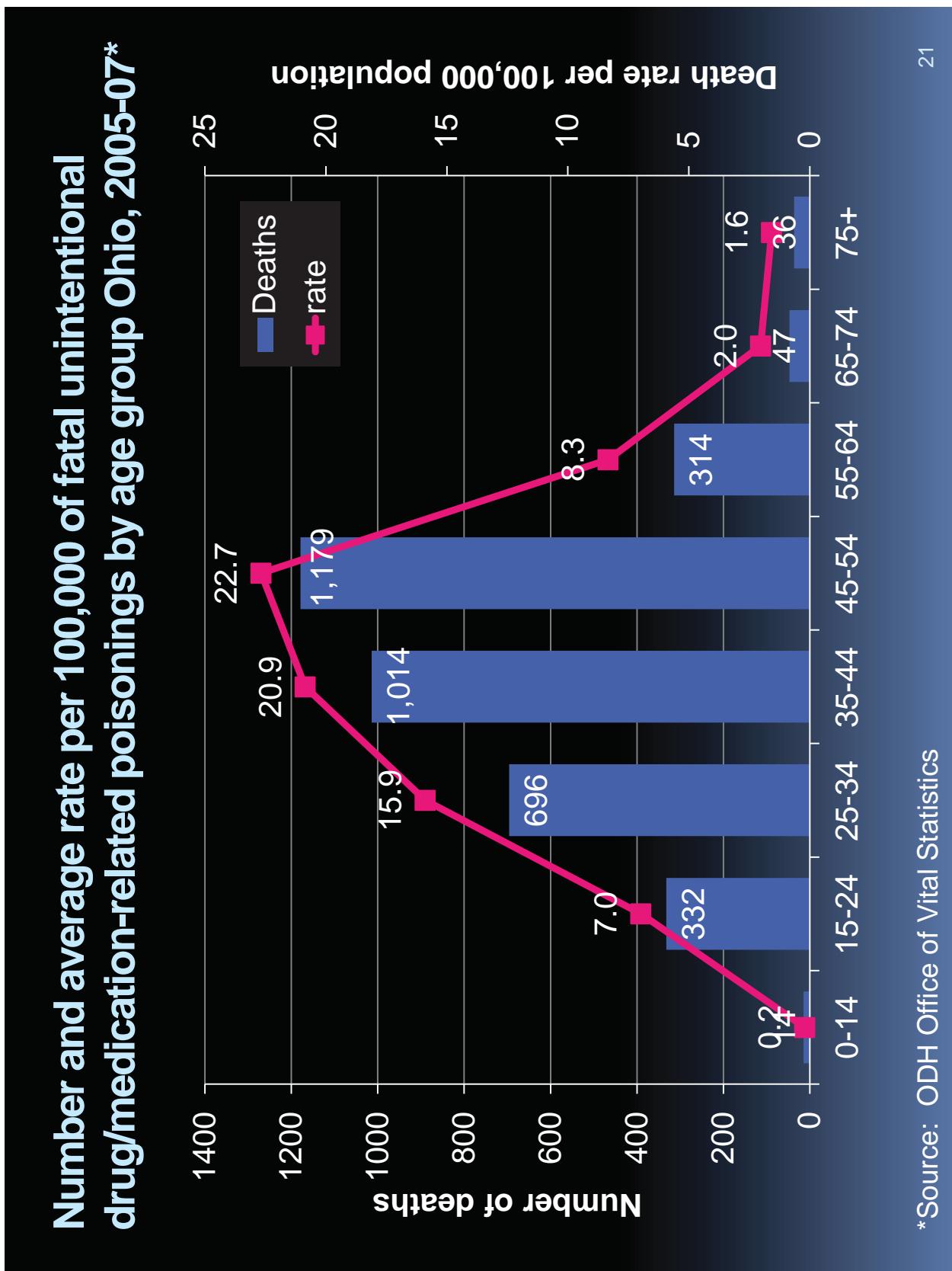
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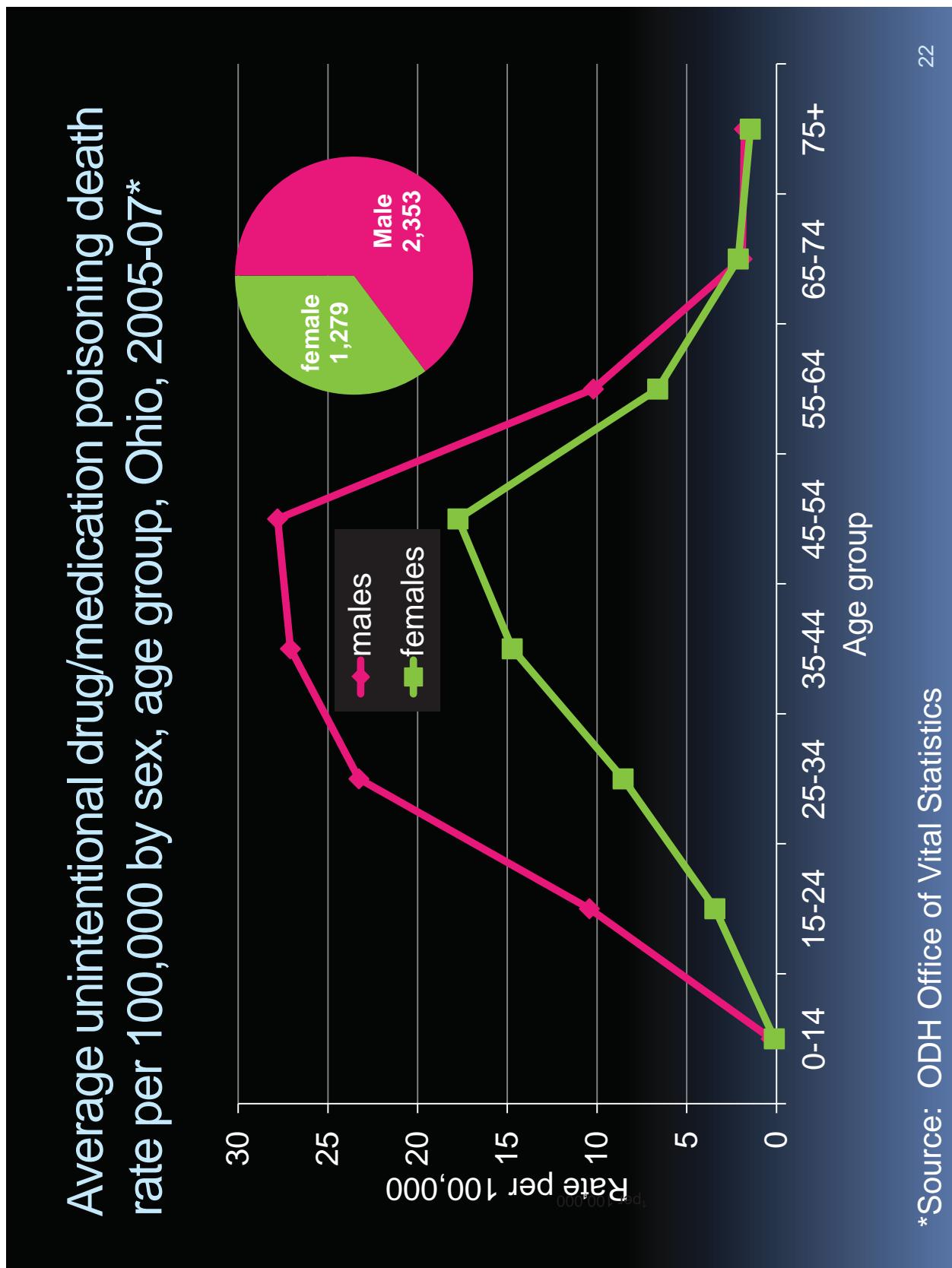
# WHO'S AT GREATEST RISK? NOT WHO YOU MIGHT EXPECT

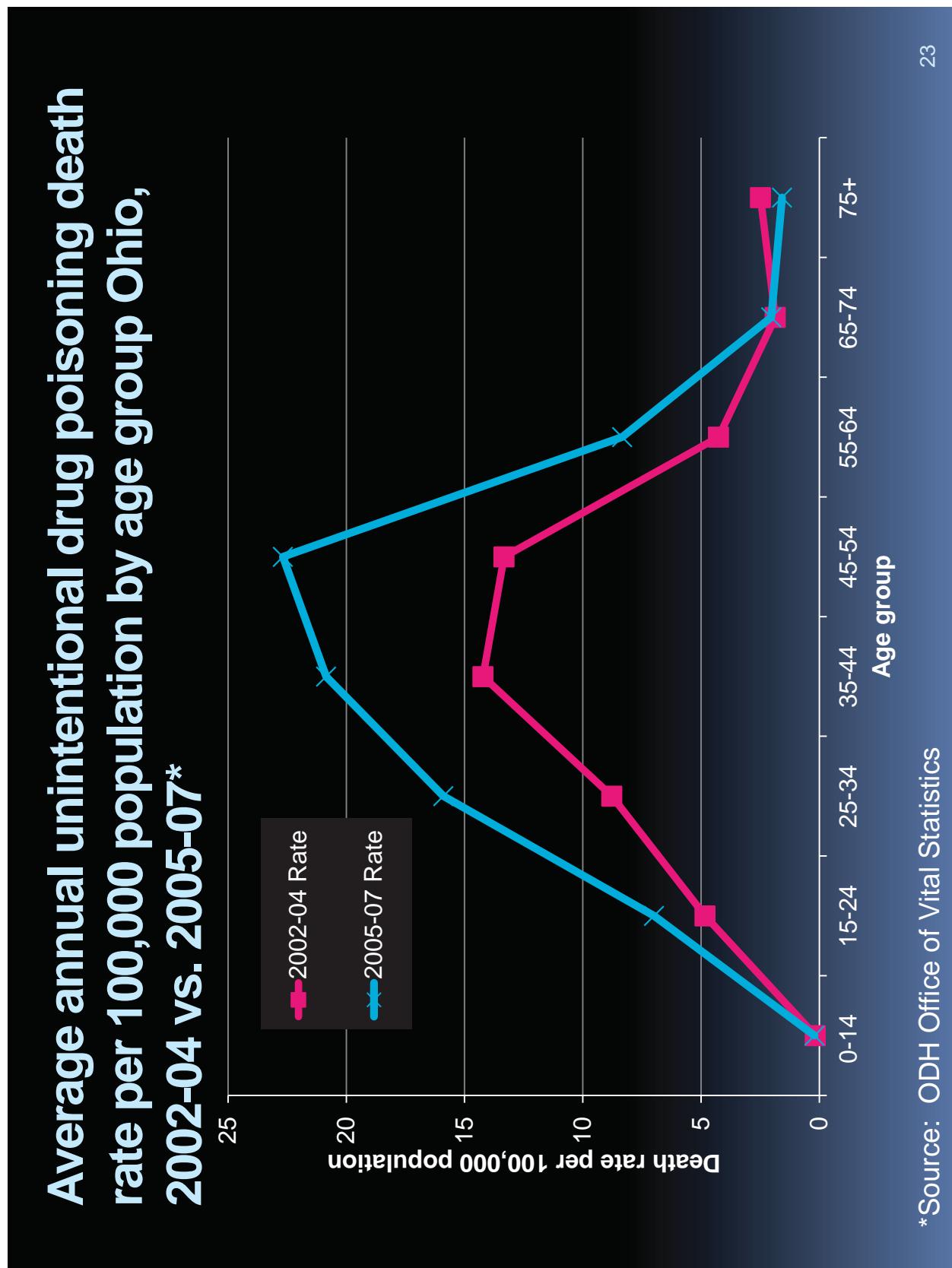


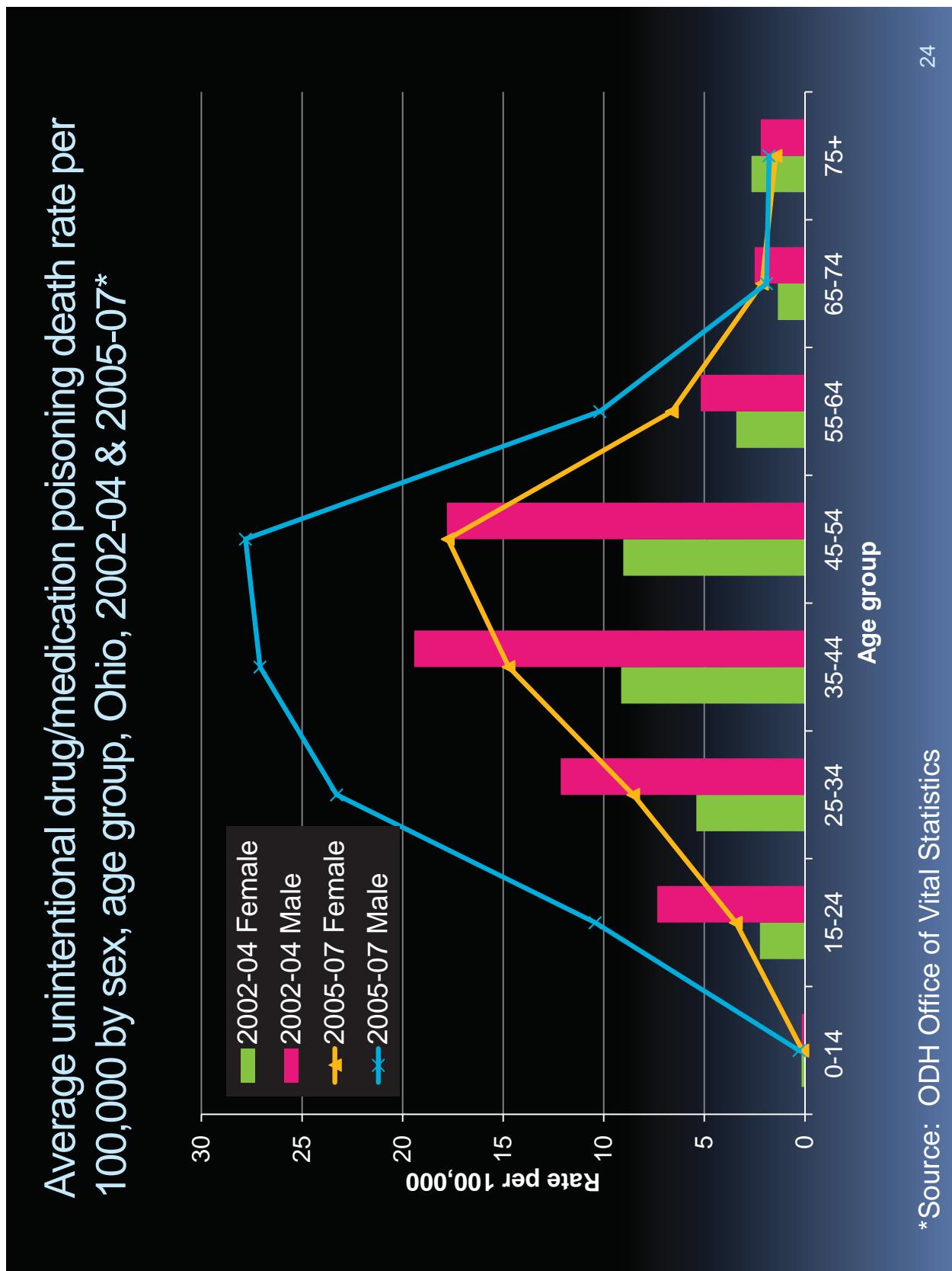
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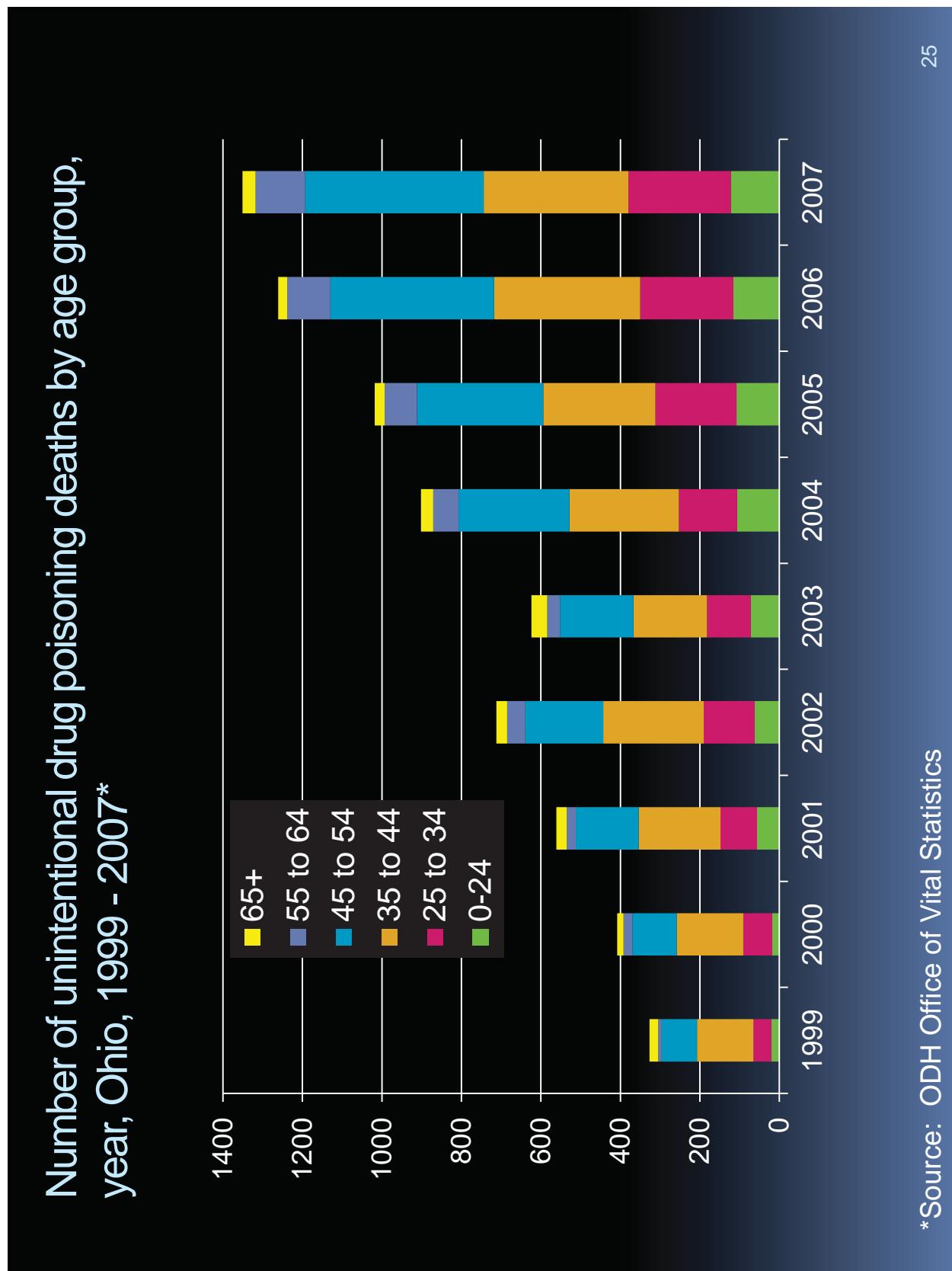
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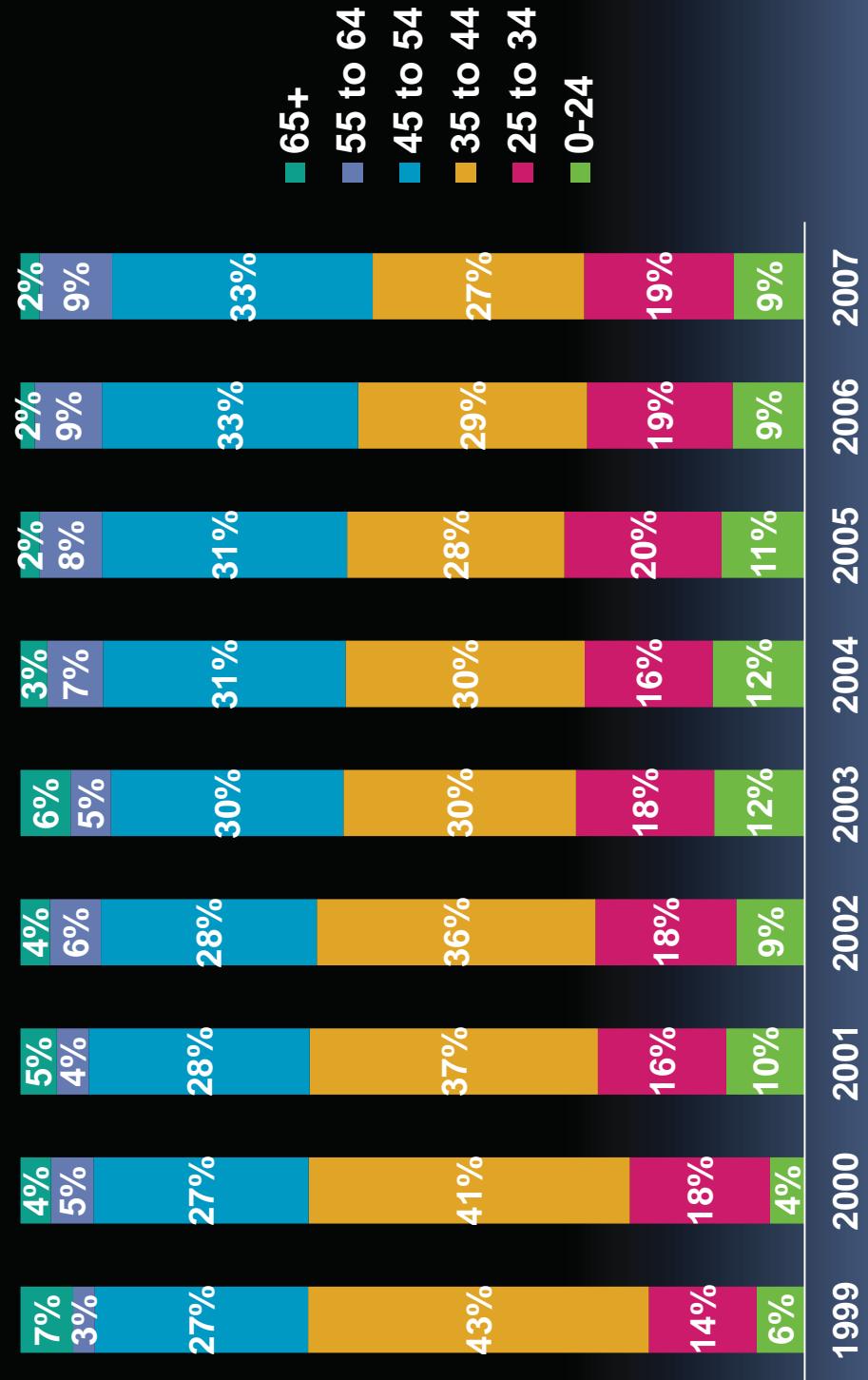








## Proportional distribution of unintentional drug poisoning deaths by age group, year, Ohio, 1999 - 2007\*



\*Source: ODH Office of Vital Statistics

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What drugs are  
responsible for rise  
in Fatal overdoses?



# Drugs of Potential Abuse

- **CNS Depressants:**

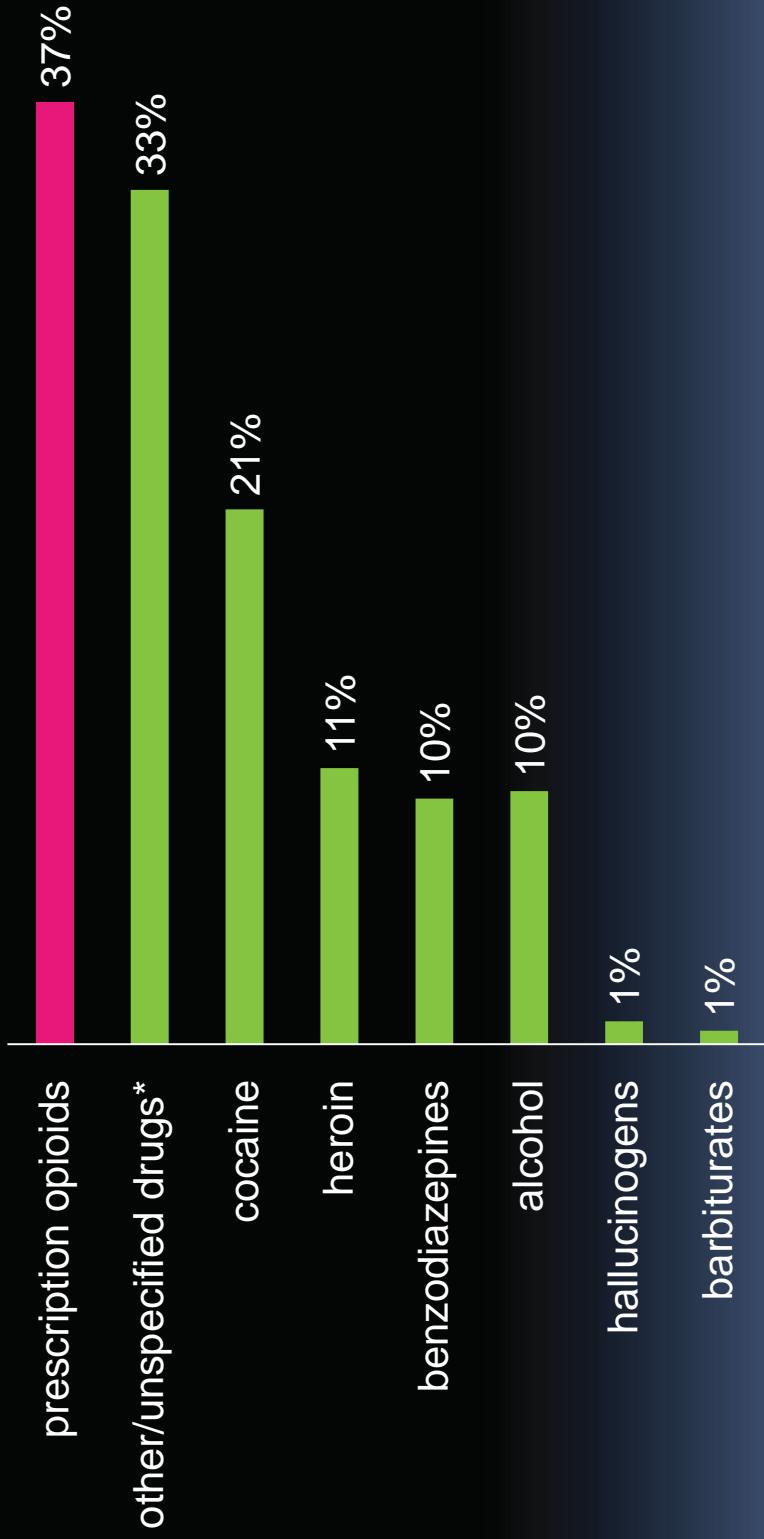
- Opioid analgesics (narcotics\*) - pain medications & heroin
- Most associated with overdoses nationally & in Ohio –
  - Methadone
  - Fentanyl – often used as a patch (transdermal application)
  - Oxycodone (OxyContin®)
  - Hydrocodone (Vicodin®)
- Benzodiazepines – anxiety/sleep - Diazepam (Valium®), alprazolam (Xanax®), etc.
- Other Sedatives, sleeping medications (Ambien®)
- Solvents/inhalants - Alcohol
- **Stimulants** – Cocaine, amphetamine, methamphetamine
- **Anti-depressants**

Source: SAMHSA<sub>28</sub>

## Proportion of all unintentional drug poisoning deaths with selected drug mentions, 2007<sup>1,2</sup>



<sup>1</sup>Source: ODH Office of Vital Statistics

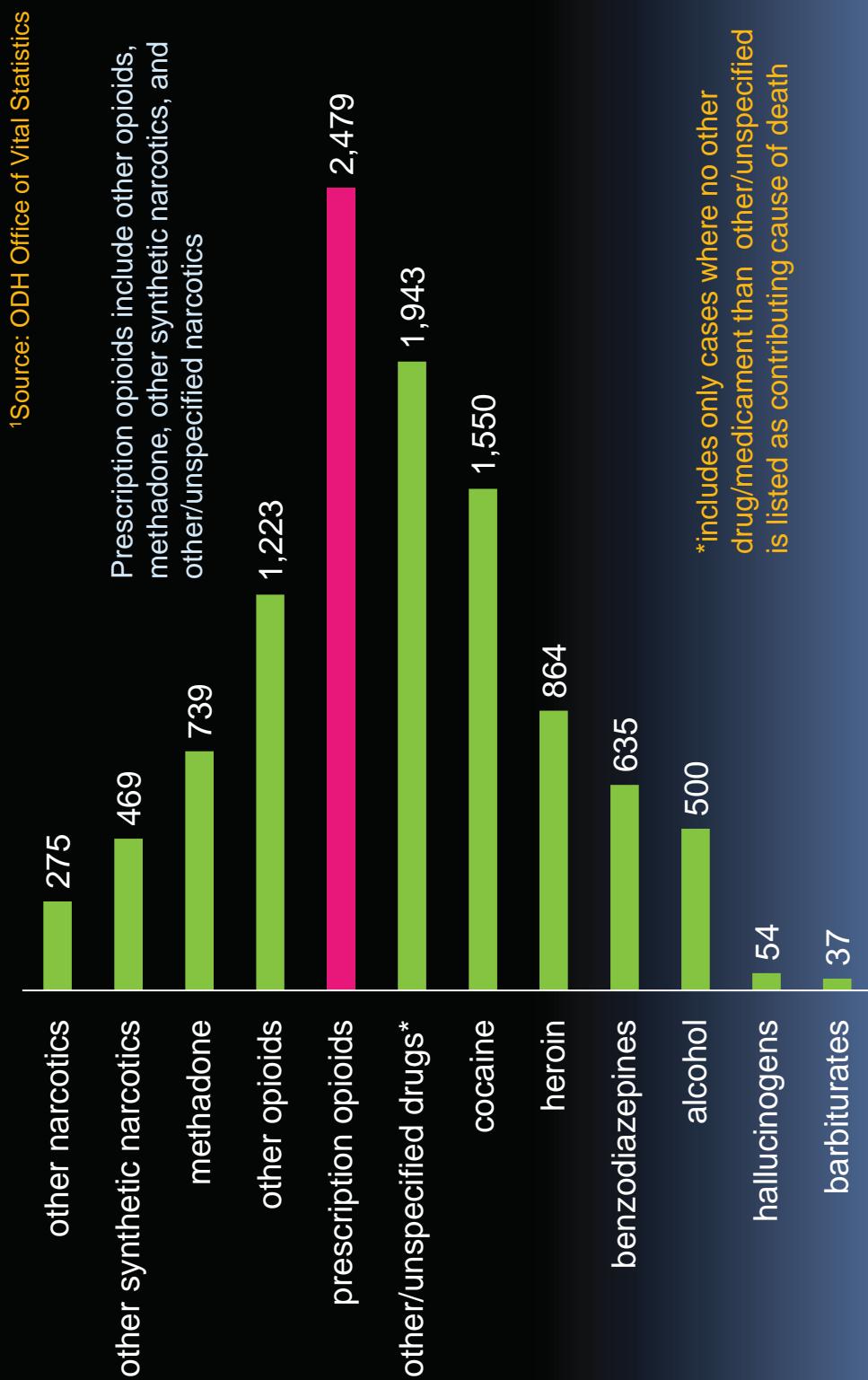


\* includes only cases where no other drug than "other & unspecified" is listed as contributing cause of death

<sup>2</sup>Prescription opioids include other opioids, methadone, other synthetic narcotics, and other/unspecified narcotics

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## Number of specific drug mentions among unintentional fatal drug poisonings, Ohio, 2000-2007<sup>1</sup>

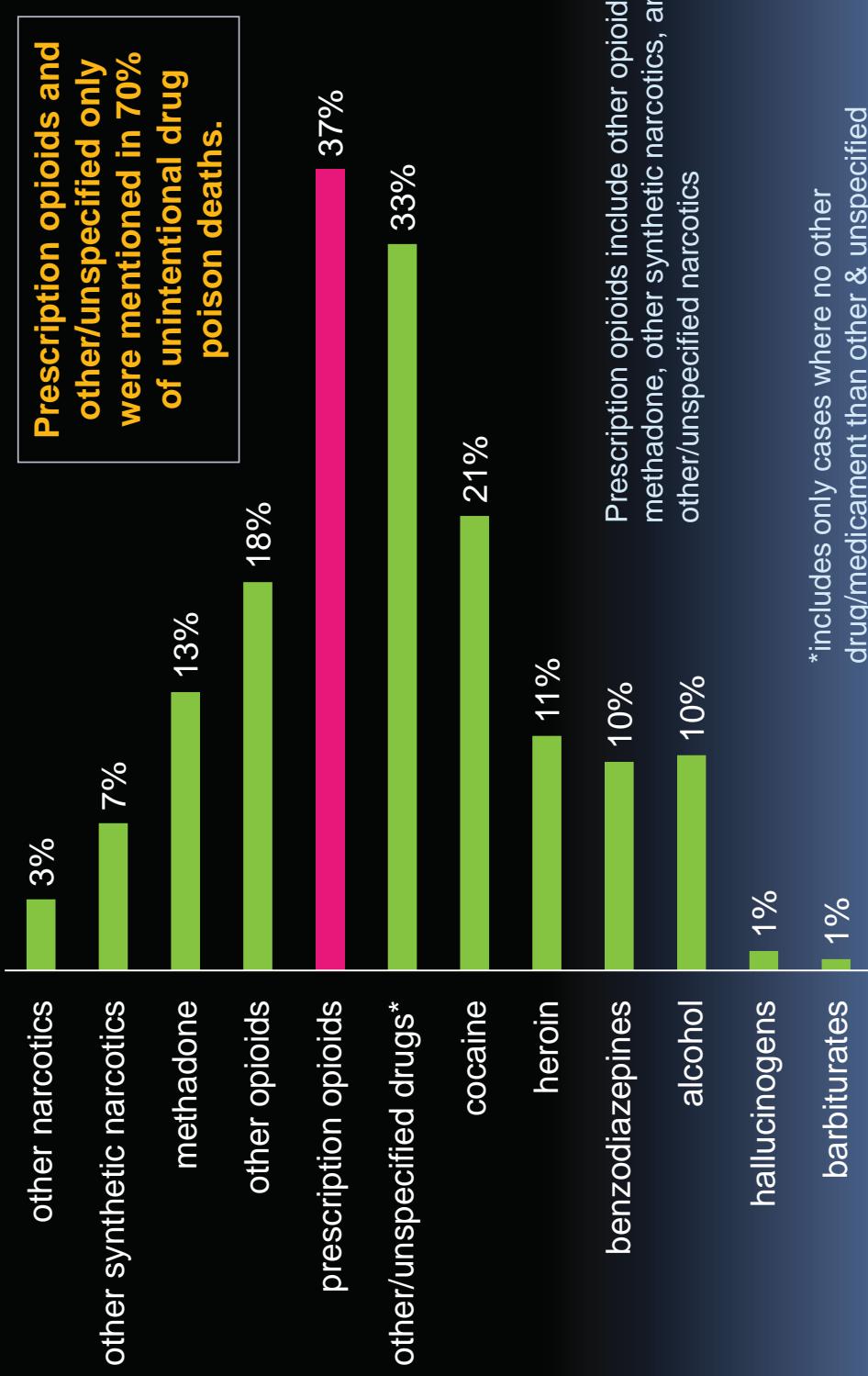


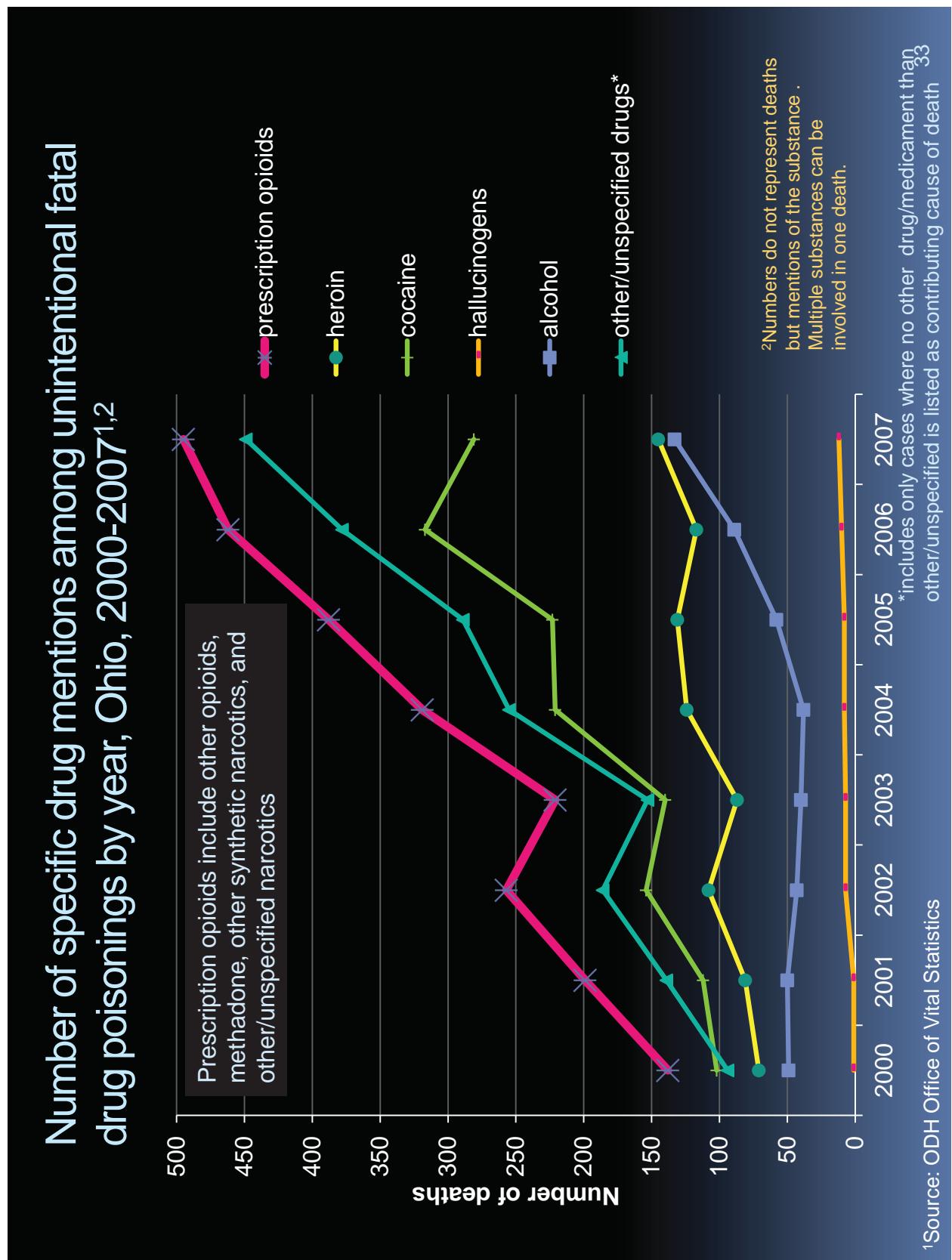
# Prescription Opioids/Narcotics

- Other Opioids (most commonly-prescribed opioids)
  - Hydrocodone (Vicodin®, Lortabs®)
  - Oxycodone (OxyContin®, Percocet®)
  - Morphine
  - Codeine
  - Hydromorphone (Dilaudid®)
- Methadone
- Other Synthetic Narcotics
  - Fentanyl (Duragesic®)
  - Propoxyphene
  - Meperidine (Demerol®)
  - Buprenorphine
- Other and Unspecified Narcotics

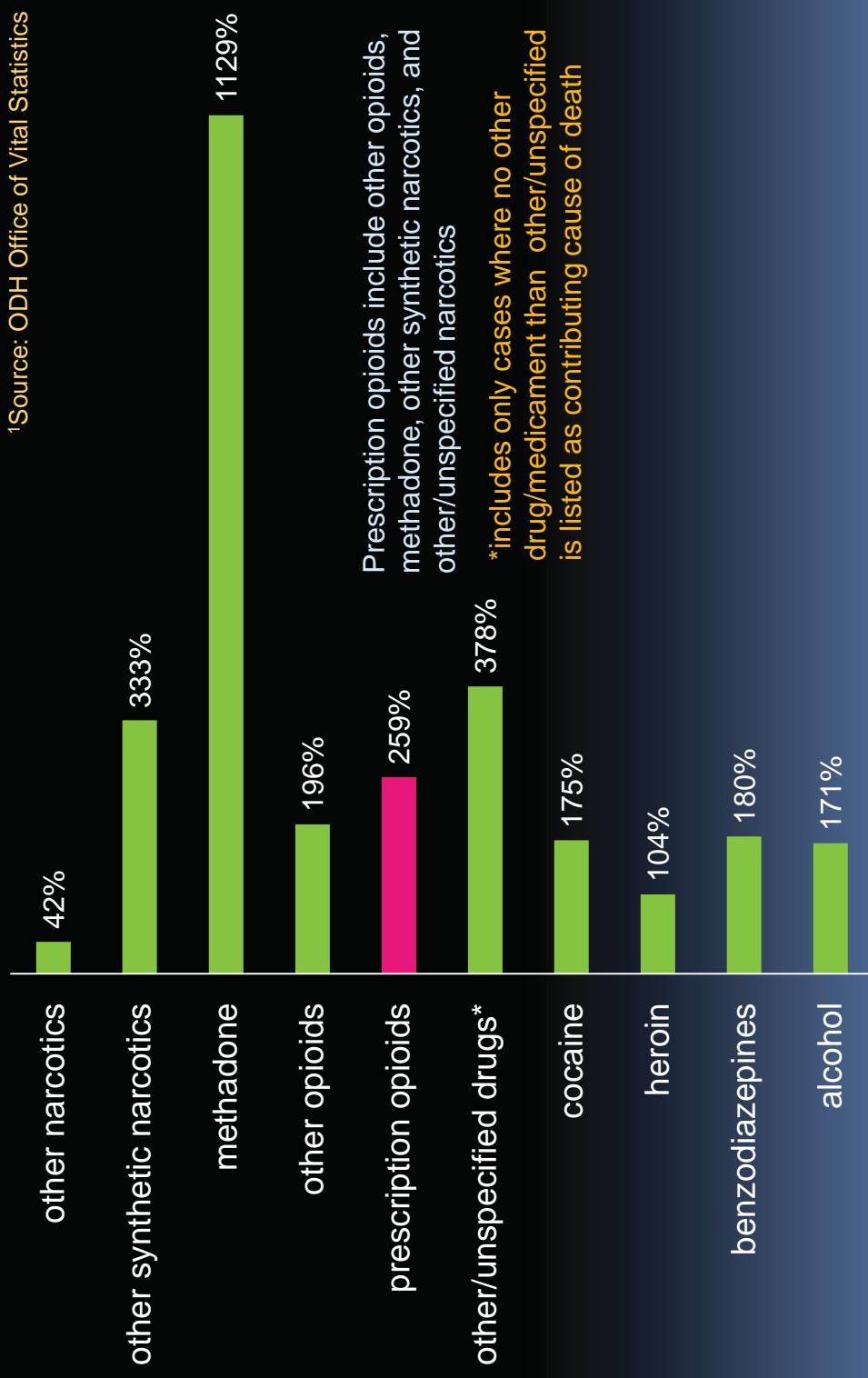
## Proportion of all unintentional drug poisoning deaths in which drug is mentioned on death certificate, Ohio 2007<sup>1</sup>

<sup>1</sup>Source: ODH Office of Vital Statistics





## Percent change in number of unintentional drug poisoning deaths in which drug is mentioned, Ohio, from 2000 to 2007<sup>1</sup>



## Proportion of all unintentional drug poisoning deaths in which drug is mentioned on death certificate, Ohio 2000-2007<sup>1</sup>

<sup>1</sup>Source: ODH Office of Vital Statistics



\*includes only cases where no other drug/medicament than other/unspecified is listed as contributing cause of death

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## No. of unintentional drug poisoning deaths involving methadone and heroin by year, Ohio 2000-2007<sup>1,2</sup>

Sources: <sup>1</sup>ODH Office of Vital Statistics,  
<sup>2</sup> where specific drug involvement is known



# Risk by Race, Sex for Specific Drugs

## Unintentional poisoning death rates per 100,000 population involving opioids<sup>1</sup>, by race, sex, year, 2000-2006, Ohio\*

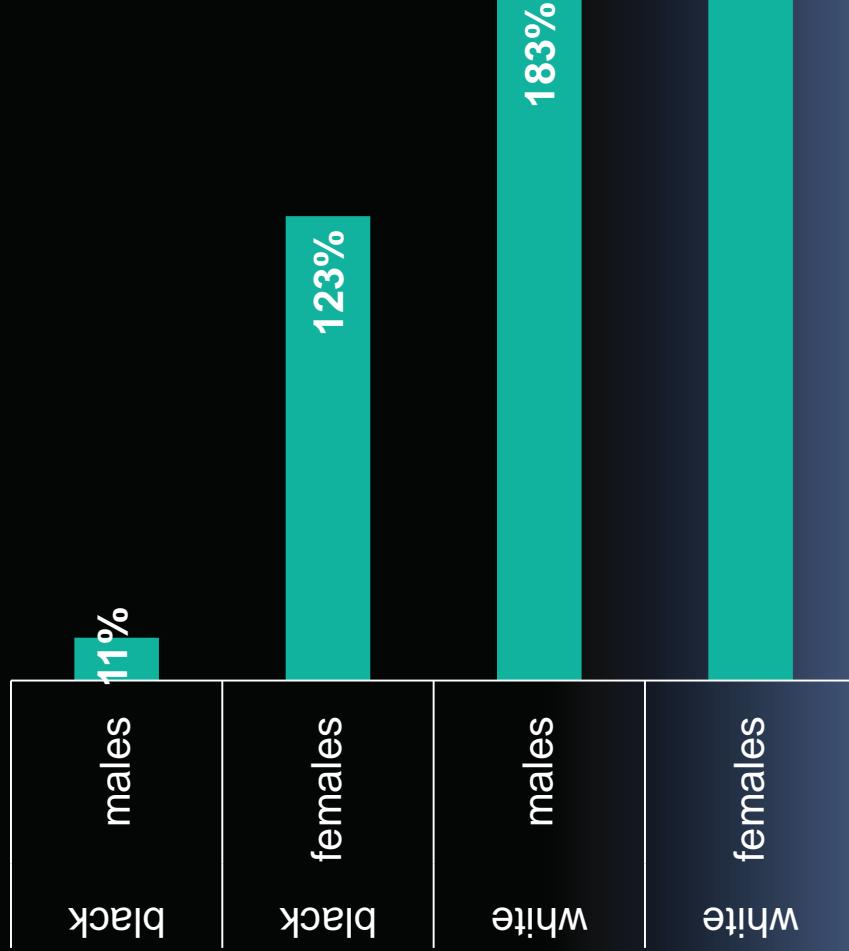


\*Source: ODH Office of Vital Statistics

<sup>1</sup>heroin, other opioids, methadone, other synthetic narcotics and other unspecified narcotics

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## Percent change in unintentional poisoning death rates involving opioids<sup>1</sup>, by race, sex, from 2000 to 2006, Ohio\*

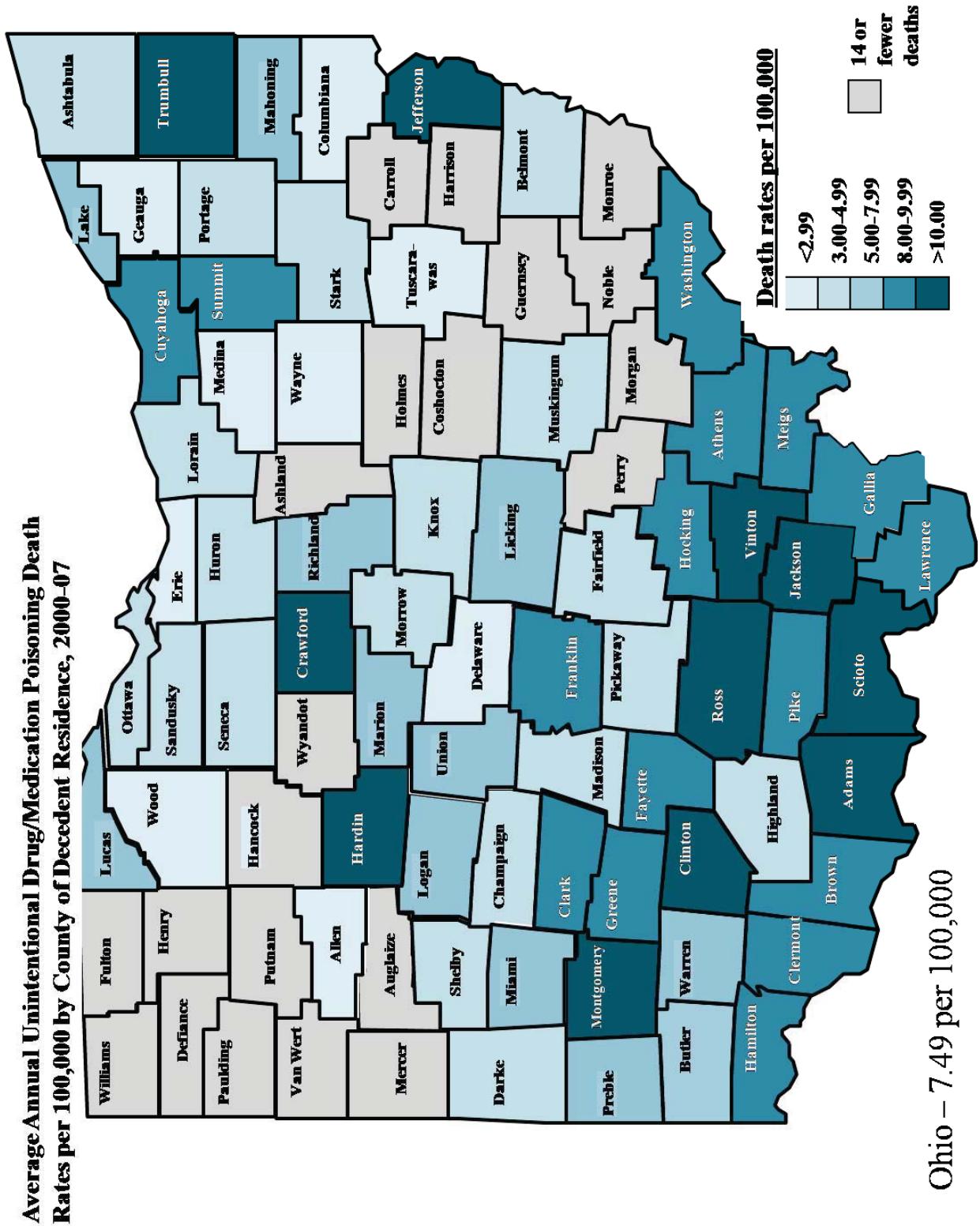


<sup>1</sup>heroin, other opioids, methadone, other synthetic narcotics and other/unspecified narcotics

39

\*Source: ODH Office of Vital Statistics

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Ohio - 7.49 per 100,000

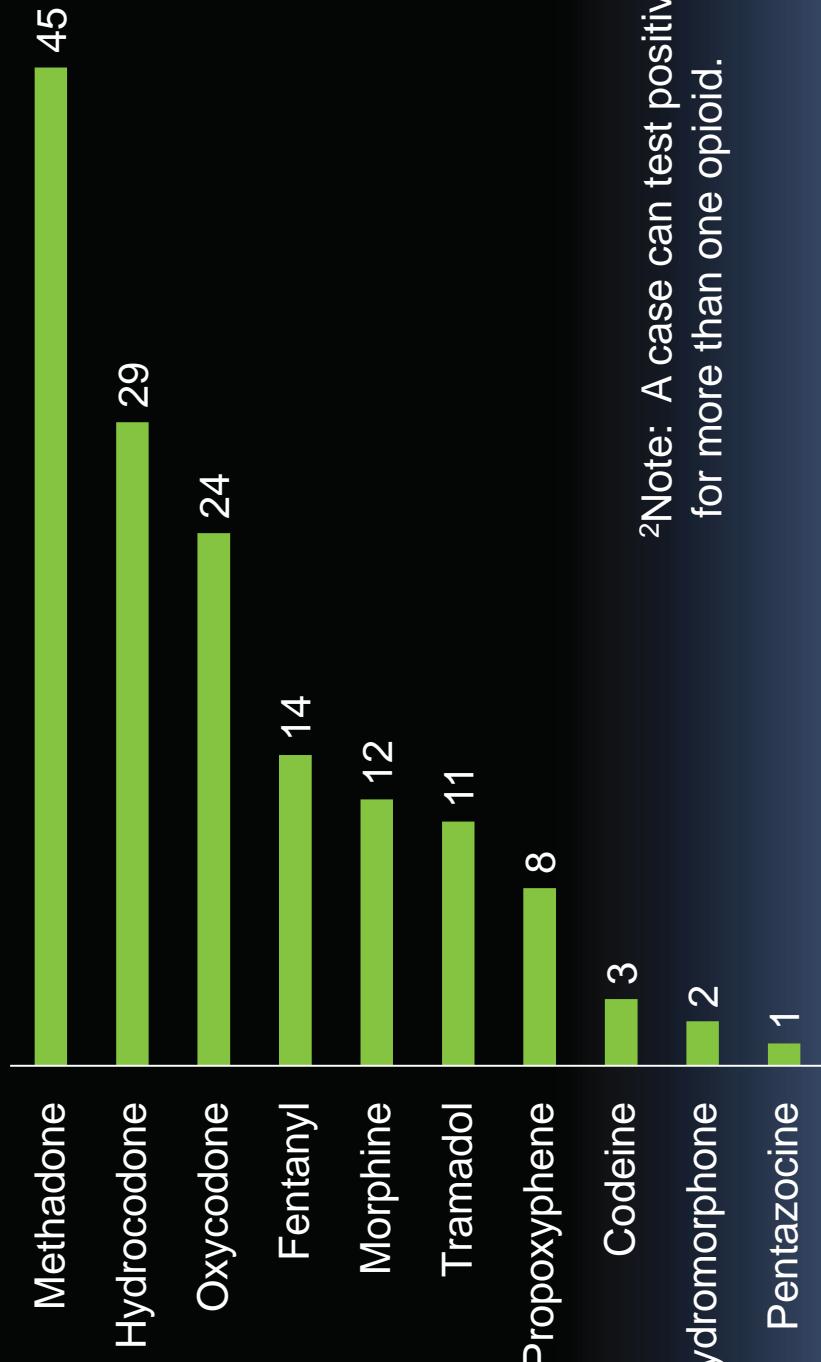
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## Ohio Counties with Highest Unintentional Drug Poisoning Death Rates, 2000-07\*

	Total Unt. Drug Poisonings			Unt. Prescription Opioid and Other/Unspecified Only		
	No.	Avg. Annual Rate	Ratio of County to State Rate	No.	Avg. Annual Rate	Ratio of County to State Rate
<b>MONTGOMERY</b>	785	17.9	2.4	532	12.1	2.5
<b>SCIOTO</b>	100	16.4	2.2	87	14.1	2.9
<b>VINTON</b>	15	14.2	1.9	12	11.4	2.4
<b>CLINTON</b>	45	13.4	1.8	36	10.8	2.2
<b>JACKSON</b>	34	12.8	1.7	30	11.4	2.4
<b>TRUMBULL</b>	221	12.6	1.7	178	10.1	2.1
<b>ROSS</b>	74	12.4	1.7	63	10.6	2.2
<b>JEFFERSON</b>	66	11.6	1.6	54	9.5	2.0
<b>CRAWFORD</b>	40	11.0	1.5	36	9.9	2.0
<b>HARDIN</b>	28	11.0	1.5	24	9.5	2.0
<b>ADAMS</b>	24	10.7	1.4	20	9	1.9
<b>Total Ohio</b>	<b>6,862</b>	<b>7.5</b>		<b>2,483</b>	<b>4.9</b>	

\*Source: Ohio Vital Statistics

## Unintentional Fatal Overdose Cases Testing Positive for Prescription Opioids, N=96, Montgomery County, 2007<sup>1,2</sup>



<sup>2</sup>Note: A case can test positive for more than one opioid.

<sup>1</sup>Source: OSAM: Surveillance of Drug Abuse Trends in Ohio, Jan 2008

# Contributing factors: Pandora's Box



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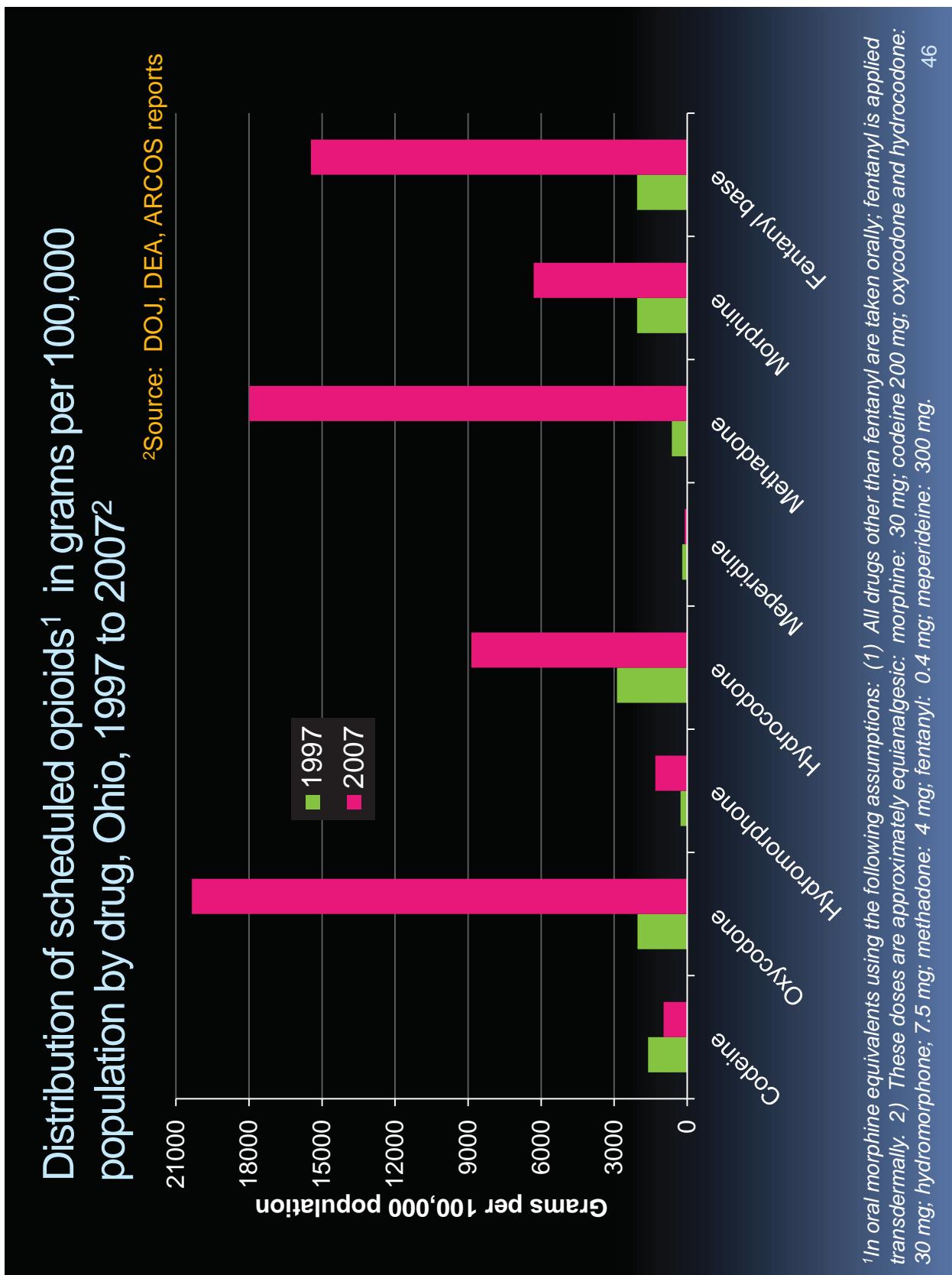


# *Opioid Prescribing Trends from late 1990's to present*

## Changes in Clinical Pain Management Prescribing Practices in 1997\*

- Change occurred in 1997 as a result of pain management advocates.
- Pain relief laws were pushed down to states
  - *Ohio Revised Code 4731.21 Drug Treatment of Intractable Pain*
- Resulted in availability of potent pain medications in the community setting that had been previously restricted to hospital use for pain (e.g., end-stage cancer) patients.

\**Intractable Pain Relief Act*



**Figure 4. Unintentional fatal drug poisoning rates<sup>1</sup> and distribution rates of prescription opioids<sup>2,3</sup> in grams per 100,000 population<sup>4</sup> by year, Ohio, 1997 -2007 (1999-2007 for opioids)**

Sources: <sup>1</sup>ODH Office of Vital Statistics, <sup>2</sup>DOJ-DEA ARCos



<sup>3</sup>Codeine, buprenorphine, oxycodone, hydromorphone, meperidine, methadone, Morphine, fentanyl base (transdermal) in opioid equivalents (morphine 30mg)  
47

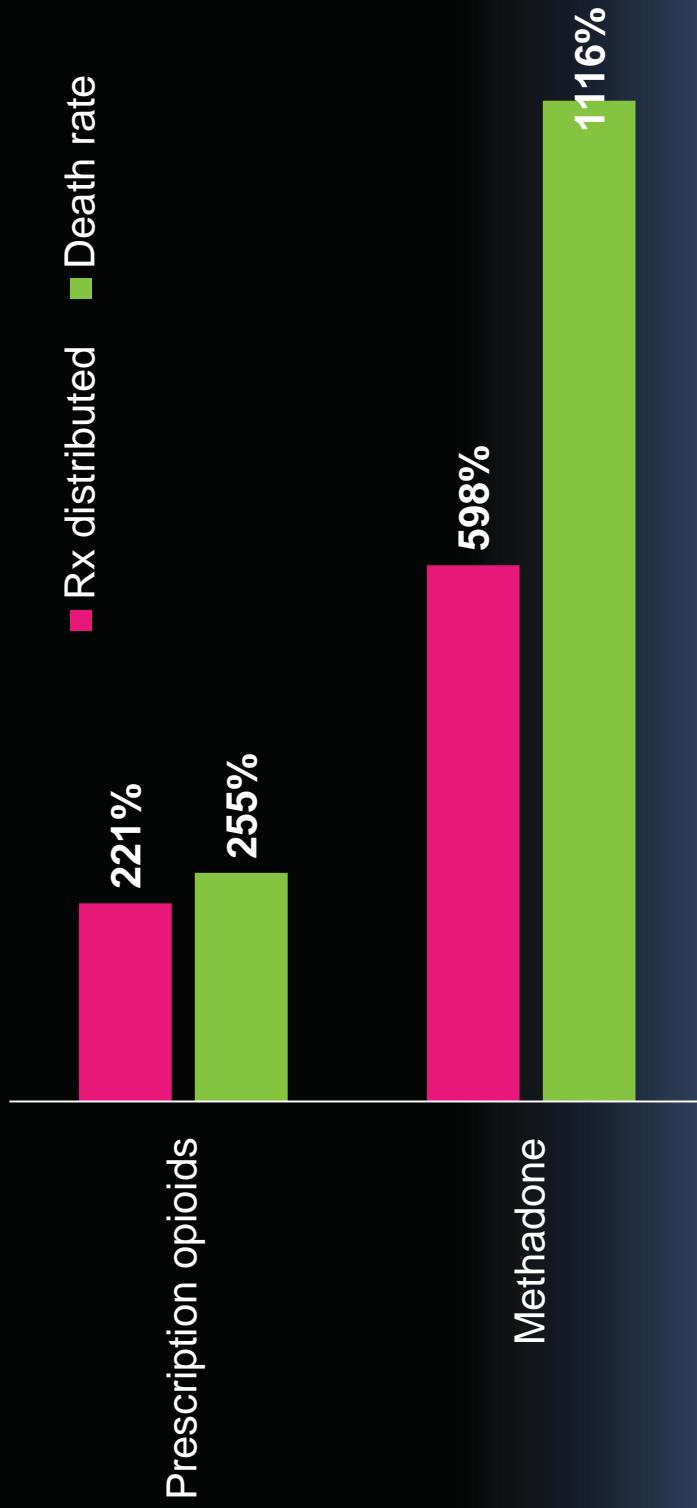
## No. of deaths<sup>1</sup> due to methadone overdose and cumulative consumption in total grams of methadone<sup>2</sup>, by year, Ohio 2000-2007



## Percent change in prescription opioid drug distribution rate<sup>1,2</sup> in grams per 100,000 vs. unintentional drug poisoning death rate<sup>2,3</sup> for methadone and all prescription opioids<sup>4</sup> from 2000 to 2007, Ohio

<sup>2</sup>per 100,000

Source: <sup>1</sup>DOJ ARCOSS, <sup>2</sup>ODH Office of Vital Statistics



<sup>4</sup>Calculation of oral morphine equivalents used the following assumptions: (1) All drugs other than fentanyl are taken orally; fentanyl is applied transdermally. 2) These doses are approximately equianalgesic: morphine: 30 mg; codeine 200 mg; oxycodone and hydrocodone: 30 mg; hydromorphone: 7.5 mg; methadone: 4 mg; fentanyl: 0.4 mg; meperidine: 300 mg. 49

50

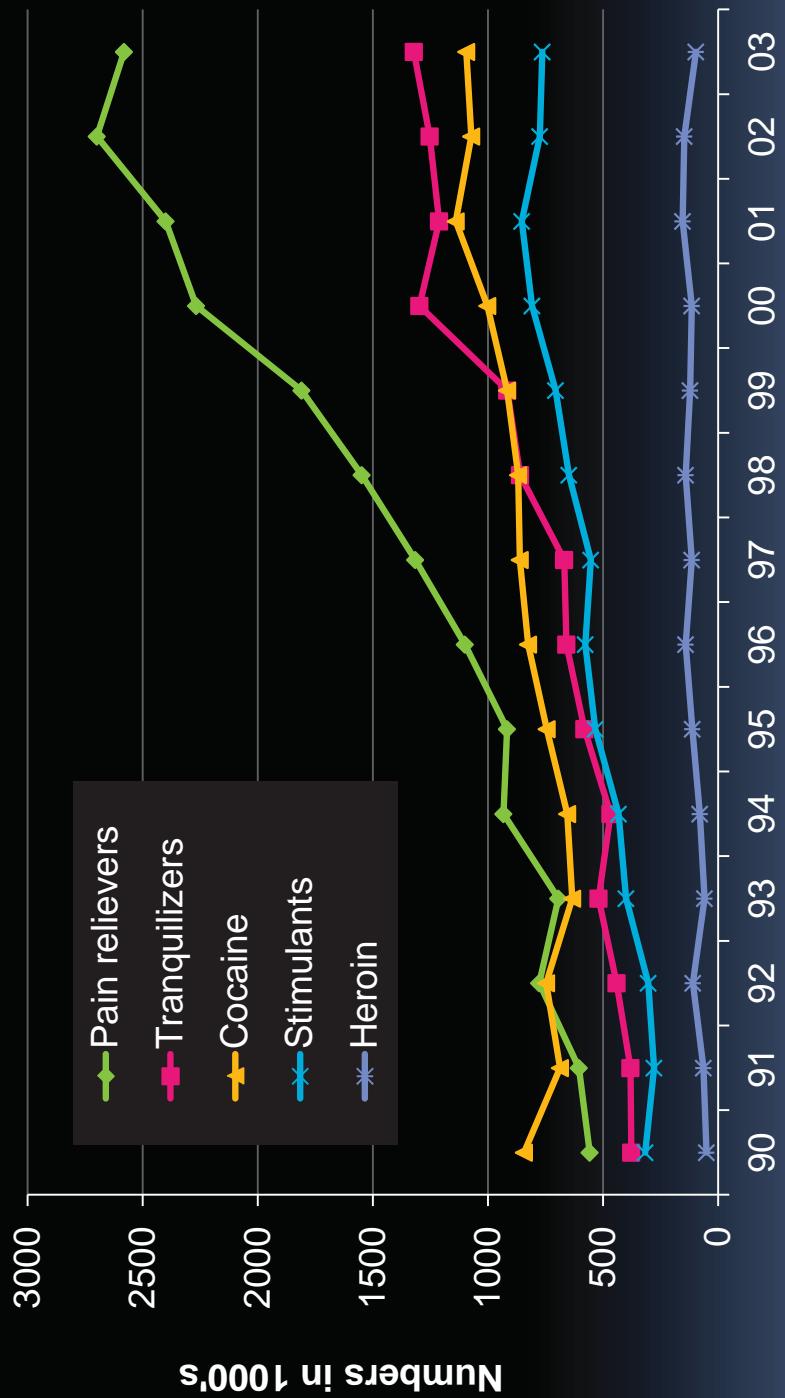


More Consequences...



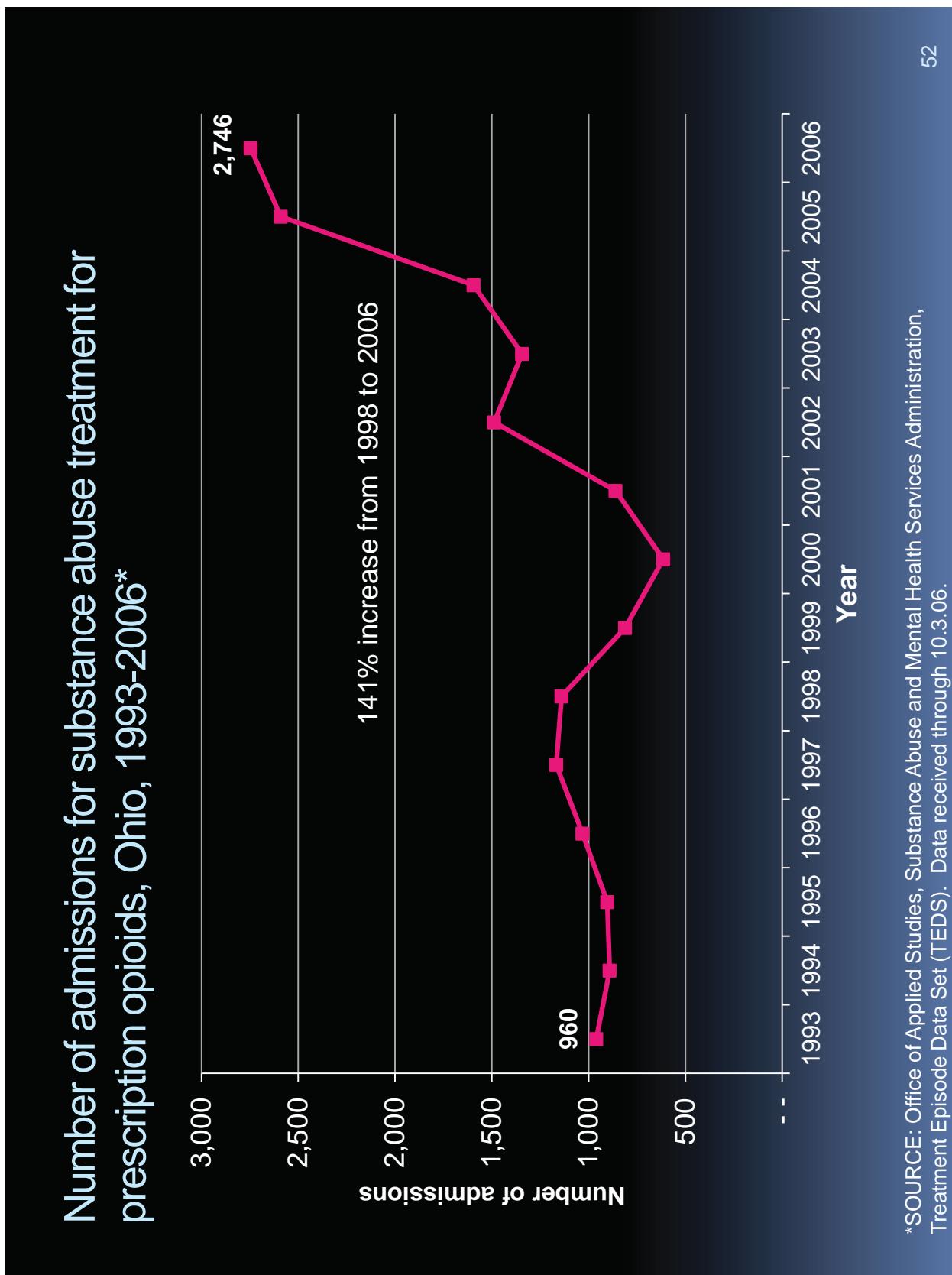
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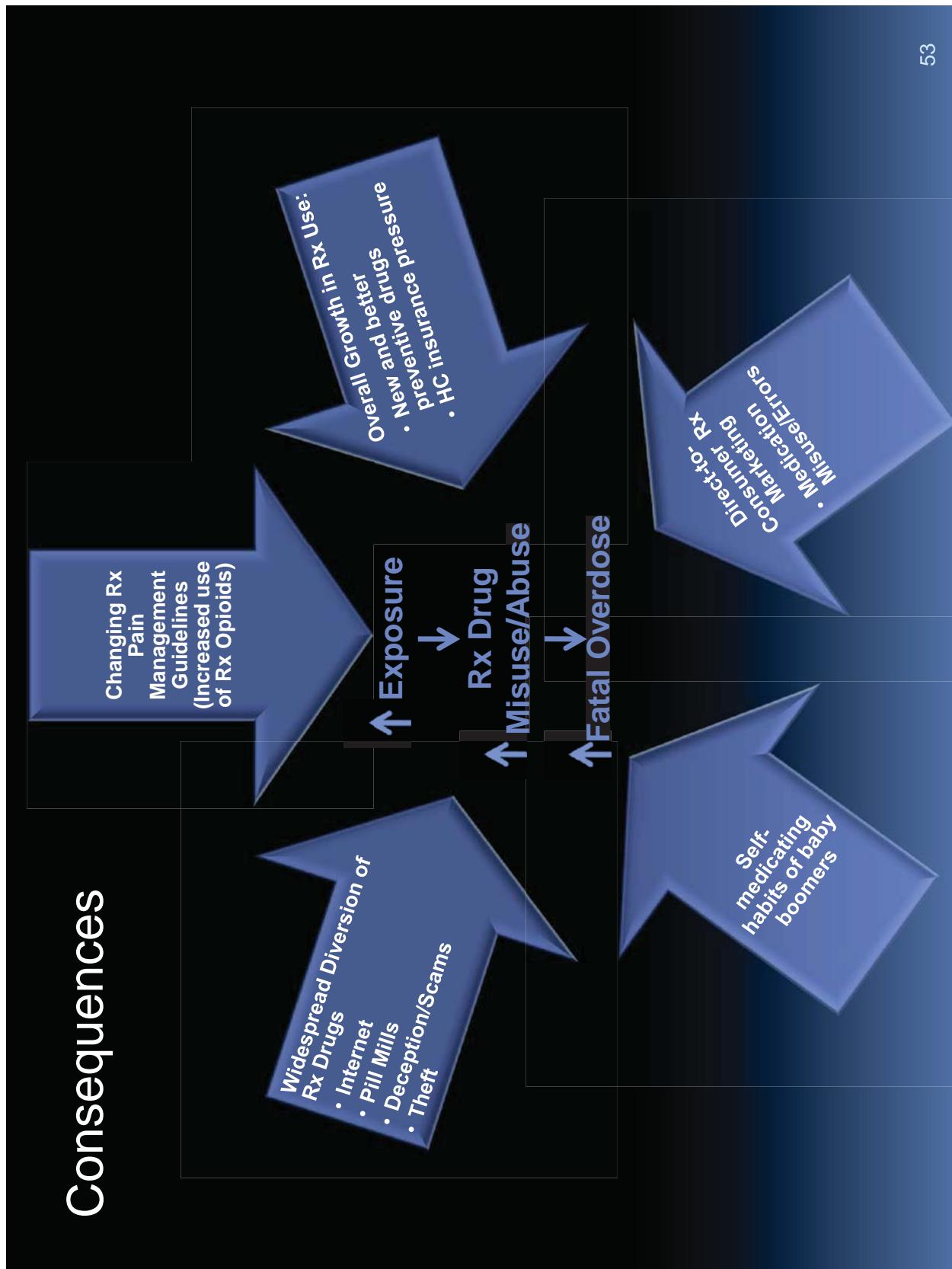
## Estimated numbers of new nonmedical users in past year by type of drug, US, 1990-2003<sup>1</sup>



<sup>1</sup>National Survey on Drug Use and Health (NSDUH) 2002-2004

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# Costs of the problem

## Estimated average annual costs of unintentional drug overdose in Ohio<sup>1</sup>

Type of Costs <sup>2</sup>	Fatal Costs <sup>2</sup>	Non-fatal, hospital admitted costs <sup>3</sup>
Medical	\$4,953,715	\$19,070,550
Work loss	\$1,210,061,576	\$5,270,670
Quality-of-Life loss	\$2,240,256,949	\$7,613,550
<b>Total</b>	<b>\$3.5 Billion</b>	<b>\$31.9 Million</b>

<sup>1</sup>Source: Children's Safety Network Economics & Data Analysis Resource Center, at Pacific Institute for Research and Evaluation, 2005; <sup>2</sup>Year 2004 Dollars, Based on 2004-2007 average Ohio incidence <sup>3</sup>Year 2005 Dollars, Based on Year 2003 Ohio incidence

## Costs of Opioid Abuse

- **Studies:**
  - National evaluation of insured populations found opioid abusers had mean annual direct health care costs **8X higher than non-abusers.**
  - Total costs for opioid abuse was \$9.5 billion in 2005 \$.
    - Costs expected to be significantly higher in 2009 due to increasing overdose rates.

- Source: ASTHO (*Association of State and Territorial Health Officials*).  
Prescription Drug Overdose: State Health Agencies Respond, 2008

# Risk Groups for Overdose: What do we know?

## Study of Rx drug overdose deaths in WV using ME, PDMP and substance abuse treatment data<sup>1</sup>

- Recent study suggests that fatal overdose problem is mixed.
- 93% of Rx drug deaths involved opioids
  - Of these, only 44% had prescriptions for these drugs
- 79% had used multiple substances (mean of 2) contributing to their fatal overdose.
- Other findings:
  - 21% obtained drugs from “Dr. Shopping”
  - 63% obtained drugs through “Diversion” (no prescription)
  - Differences found by gender and age group

**95% had indicators of substance abuse**

<sup>1</sup>Source: Hall et al. Patterns of abuse among unintentional pharmaceutical overdose fatalities. JAMA 2008;

## Study of overdose deaths in WV using ME, PDMP and substance abuse treatment data<sup>1</sup>

- Among all deaths:
  - Opioids were involved in 93%
  - Psychotherapeutic drugs (benzodiazepines/antidepressants) were involved in 49%.
- Of the 61 (21%) single-drug deaths, only 1 was due to a psychotherapeutic drug (amitriptyline) - fatal overdose is less likely with a single psychotherapeutic drug than with a single opioid.
- Methadone was responsible for more single-drug deaths and was involved in far more deaths than any other drug.

<sup>1</sup>Source: Hall et al. Patterns of abuse among unintentional pharmaceutical overdose fatalities. JAMA 2008

## Risk Groups for Opioid Overdose\*

1. **Pain patients:**
  - Taking high doses of medication.
  - Taking medications incorrectly.
2. **Nonmedical pain medication users** and those with a history of substance abuse
  - *WV study: 95% had indicators of substance abuse*
3. **Persons who have already experienced a drug overdose.**
4. **Persons taking multiple medications, especially multiple CNS depressants, simultaneously**
  - *WV study: 79% used multiple substances that contributed to OD*

\*Sanford K. *Findings and Recommendations of the Task Force to Prevent Deaths from Unintentional Drug Overdoses in North Carolina, 2003.*

## Risk Groups for Opioid Overdose<sup>1</sup>

5. **Persons with chronic health problems such as:**
  - COPD, emphysema, respiratory illness, heart problems, renal dysfunction or hepatic disease.
6. **Using after a period of abstinence (e.g., after SA treatment or recently released prisoner population)**
7. **Patients newly starting methadone for pain control and patients who have switched to methadone after treatment with other strong opioid pain relievers**

<sup>1</sup> Sanford K. *Findings and Recommendations of the Task Force to Prevent Deaths from Unintentional Drug Overdoses in North Carolina, 2003.*

# Other Risk Factors

- Low income
  - Medicaid recipients are more likely to be prescribed narcotics and to die from prescription drug overdoses<sup>1</sup>
  - Lower educational attainment and increased poverty in decedent's county of residence were both associated with greater death rates in a dose-response fashion.<sup>2</sup>
- Lack of substance abuse treatment
- Gender
  - Males- Most deaths<sup>3</sup>
  - Females – Fastest growing group
    - Drug/medication poisoning death rates for females increased 133% from 1999 to 2005 in the U.S, versus 75% for males.<sup>4</sup>

Sources: <sup>1</sup>ASTHO (Association of State and Territorial Health Officials) Report: *Prescription Drug Overdose: State Health Agencies Respond* [http://www.astho.org/pubs/RXReport\\_Web.pdf](http://www.astho.org/pubs/RXReport_Web.pdf)

<sup>2</sup>Hall et al. *Patterns of abuse among unintentional pharmaceutical overdose fatalities*. JAMA 2008.  
<sup>3</sup>Ohio Vital Statistics <sup>4</sup>CDC WONDER

# Summary and Response

## What we know so far..

- Regulated prescription drugs taken mostly by mouth can produce a larger overdose epidemic than illicit drugs of uncertain strength taken intravenously.
- Ohio's rates are greater than US; particularly in southern OH
- Increased access to opioid medications from late '90's on
- White males at highest risk for opioid OD but white females are the fastest growing group.
- Males aged 45-54 have the highest death rates of all.

## What we know so far..

- Most deaths are associated with opioids/narcotics.
- Most rapid increases associated with synthetic opioids (e.g., Methadone)
- Multiple substance use (polypharmacy) is a factor in many of these deaths, complicating issue. Polypharmacy is a risk factor for fatal overdose.
- Single drug overdoses more likely to be opioids (especially those with long half-life or extended release)
- Diversion of RXs, Dr. shopping & substance abuse play a large role.
- We need additional information about the substances responsible and how they are being used.

What we don't know....

## Proportion of all unintentional drug poisoning deaths in which drug is mentioned on death certificate, Ohio 2007<sup>1</sup>

<sup>1</sup>Source: ODH Office of Vital Statistics



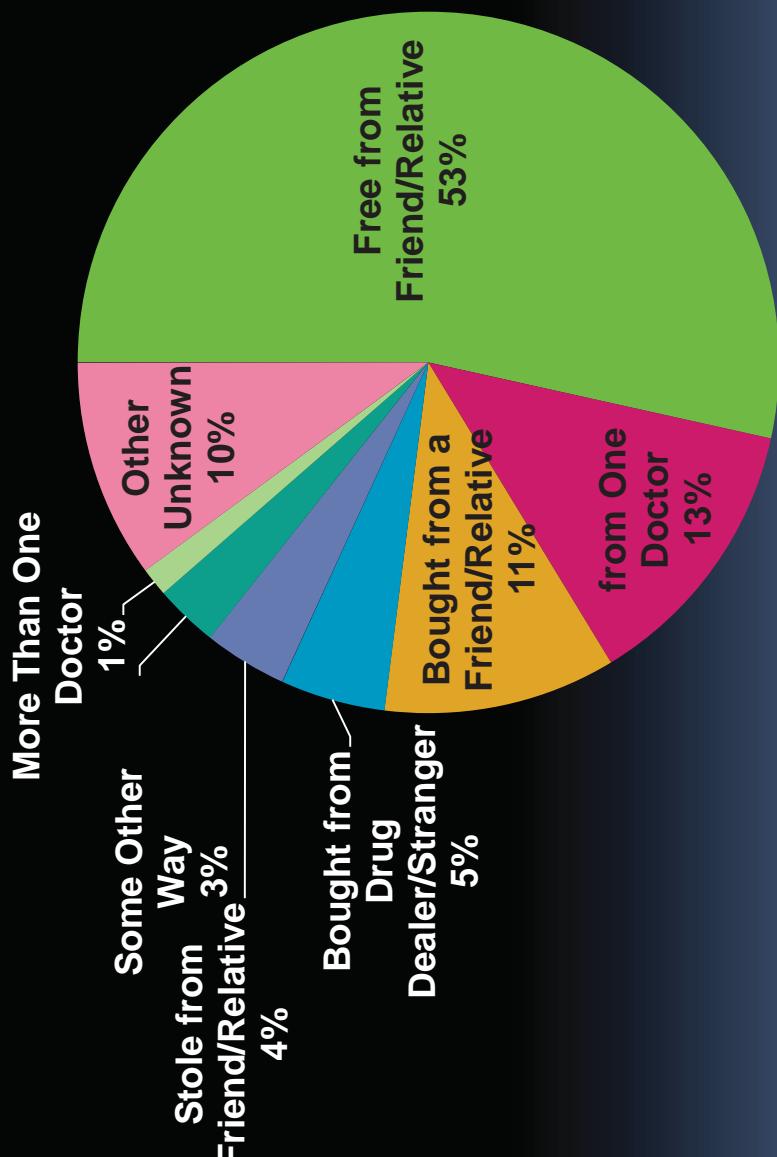
Prescription opioids include other opioids, methadone, other synthetic narcotics, and other/unspecified narcotics

<sup>\*</sup>includes only cases where no other drug/medicament than other & unspecified is listed as contributing cause of death

## What we don't know...

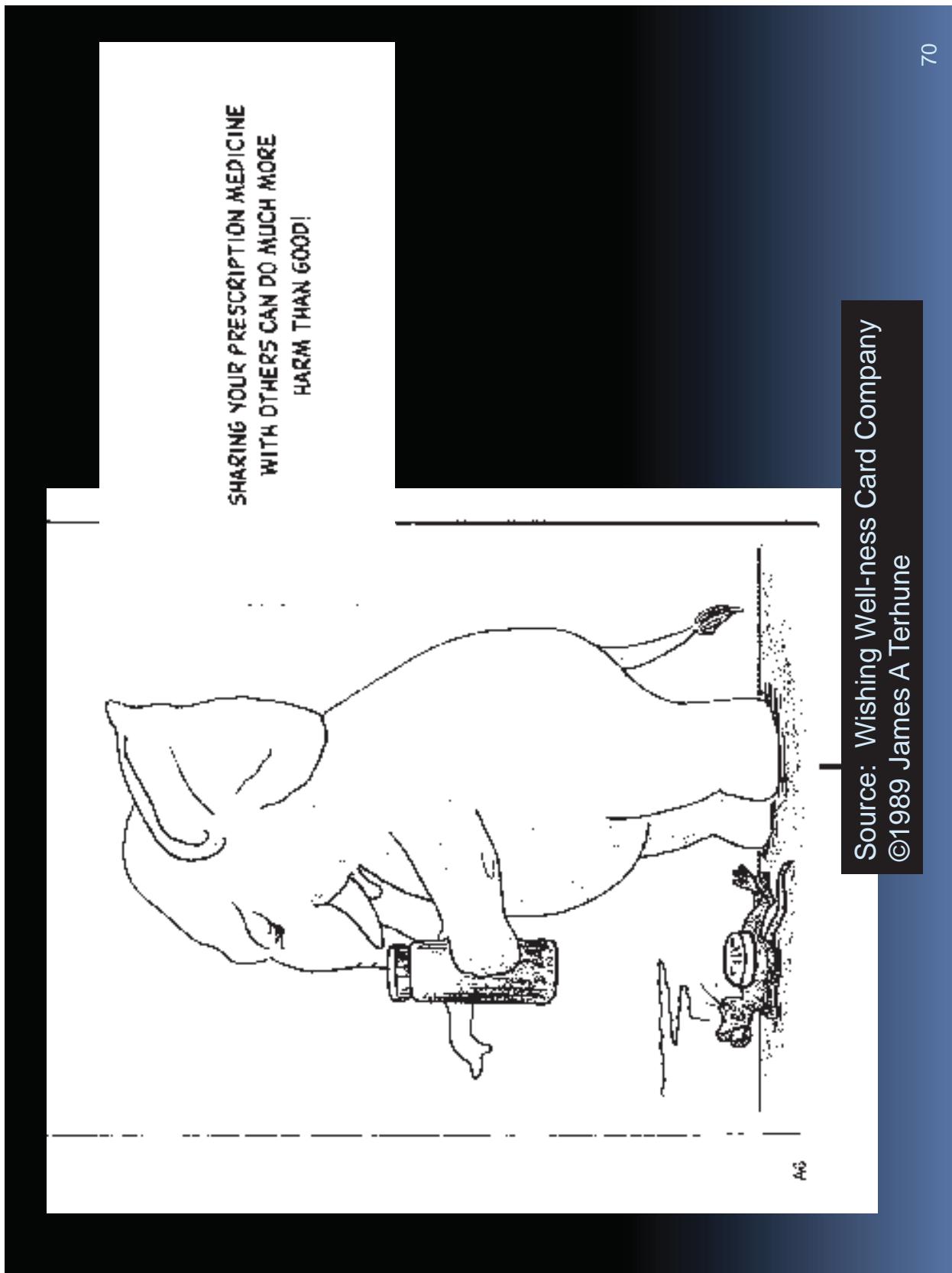
- Which drugs are involved in multiple drug deaths.
- Where people who are dying are getting their drugs in Ohio – expect similar results to WV study?
- What the most effective solutions are for the problem
  - many strategies are being tested – more evaluation is needed.

## Access: Percentages of Reported Method\*\* of Obtaining Prescription Pain Relievers for Their Most Recent Nonmedical Use in the Past Year among Persons Aged 18 to 25: 2005 NSDUH



Substance Abuse and Mental Health Services Administration. (2006). Results from the 2005 National Survey on Drug Use and Health: National Findings. (Office of Applied Studies, NSDUH Series H-30, DHHS Publication No. SMA 06-4194). Rockville, MD. [www.oas.samhsa.gov/nsduh/2k5nsduh/2k5Results.pdf](http://www.oas.samhsa.gov/nsduh/2k5nsduh/2k5Results.pdf)

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## For More Information...

- Hall AJ, Logan JE, Toblin RL, et al. *Patterns of abuse among unintentional pharmaceutical overdose fatalities*. JAMA 2008;300(22):2613-20. <http://jama.ama-assn.org/cgi/content/full/300/22/2613>
- ASTHO (Association of State and Territorial Health Officials) Report: *Prescription Drug Overdose: State Health Agencies Respond* [http://www.astho.org/pubs/RXReport\\_Web.pdf](http://www.astho.org/pubs/RXReport_Web.pdf)
- *Drug Abuse in America: Prescription Drug Diversion*. Trend Alert: Critical Information for State Decision-makers. The Council of State Governments. April 2004 <http://www.csg.org/pubs/Documents/TA0404DrugDiversion.pdf>
- Subscribe for OSAM-O-Grams – Wright State University & University of Akron <http://www.med.wright.edu/citar/osam.html>
- ODH Factsheet <http://healthyohioprogram.org/ASSETS/45E86204619D4F0B813F82D77D5FA500/Poison.pdf>

## State Health Agencies Response

- See the early steps that nine states took in a CDC/NCIPC – ASTHO joint report:
  - *Prescription Drug Overdose: State Health Agencies Respond*
- Available at  
[http://www.astho.org/?template=innovative\\_programs.html](http://www.astho.org/?template=innovative_programs.html)

# National Meetings and Presentations

- **State Strategies for Preventing Prescription Drug Overdoses**

January 13-14, 2008, Atlanta, Georgia

*Sponsored by the CDC's NCI/PC*

<http://www.stipda.org/displaycommon.cfm?an=1&subarticlenbr=204>

- **Promising Legal Responses to Epidemic of Prescription Drug Overdoses in US**

December 2-3, 2008, Atlanta, Georgia

*Sponsored by the CDC's NCI/PC and the Public Health Law Program of the CDC*

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## Prescription Drug Overdose: State Health Agencies Respond: State Strategies

- Prescription Drug Monitoring Programs (PDMPs)- Ohio Automatic Rx Reporting System (OARRS) – Ohio Board of Pharmacy
- PDMP Data Sharing
- Single copy, Non-serialized paper prescription forms
- E-prescribing
- Doctor Shopping Statutes
- Return of Unused Pharmaceuticals
- Pain Clinic Laws
- Drug Courts
- Patient Review & Coordination (PRC) or “Lock-in” Medicaid Programs
- Clinical Guidelines for Chronic and/or Acute Pain Management
  - ED Programs to Reduce Frequent Visitors
  - Naloxone Distribution and Harm Reduction

# Ohio Department of Health – Violence and Injury Prevention Program

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